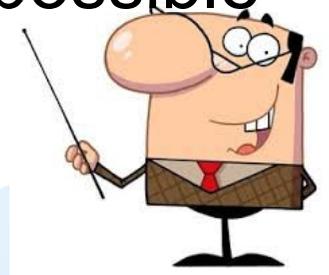


**UNDERSTANDING PRESCHOOL CHILDREN'S
SKILL IN SUBTRACTION USING
COOPERATIVE LEARNING**

**NURUL ALIAH MUSTAFA
SHARIFAH SALWAH SYED OMAR
NORAZILLA SHAFIE
MOHD FAUZI KAMARUDIN**

INTRODUCTION

- Early childhood education in Malaysia towards uplifting children's education and their future.
- The Early Math subject provides initial experience that embodies the math concepts (Kementerian Pelajaran Malaysia, 2009).
- In line with that, it is imperative to instill and practice thoughtful learning as early as possible since early childhood.



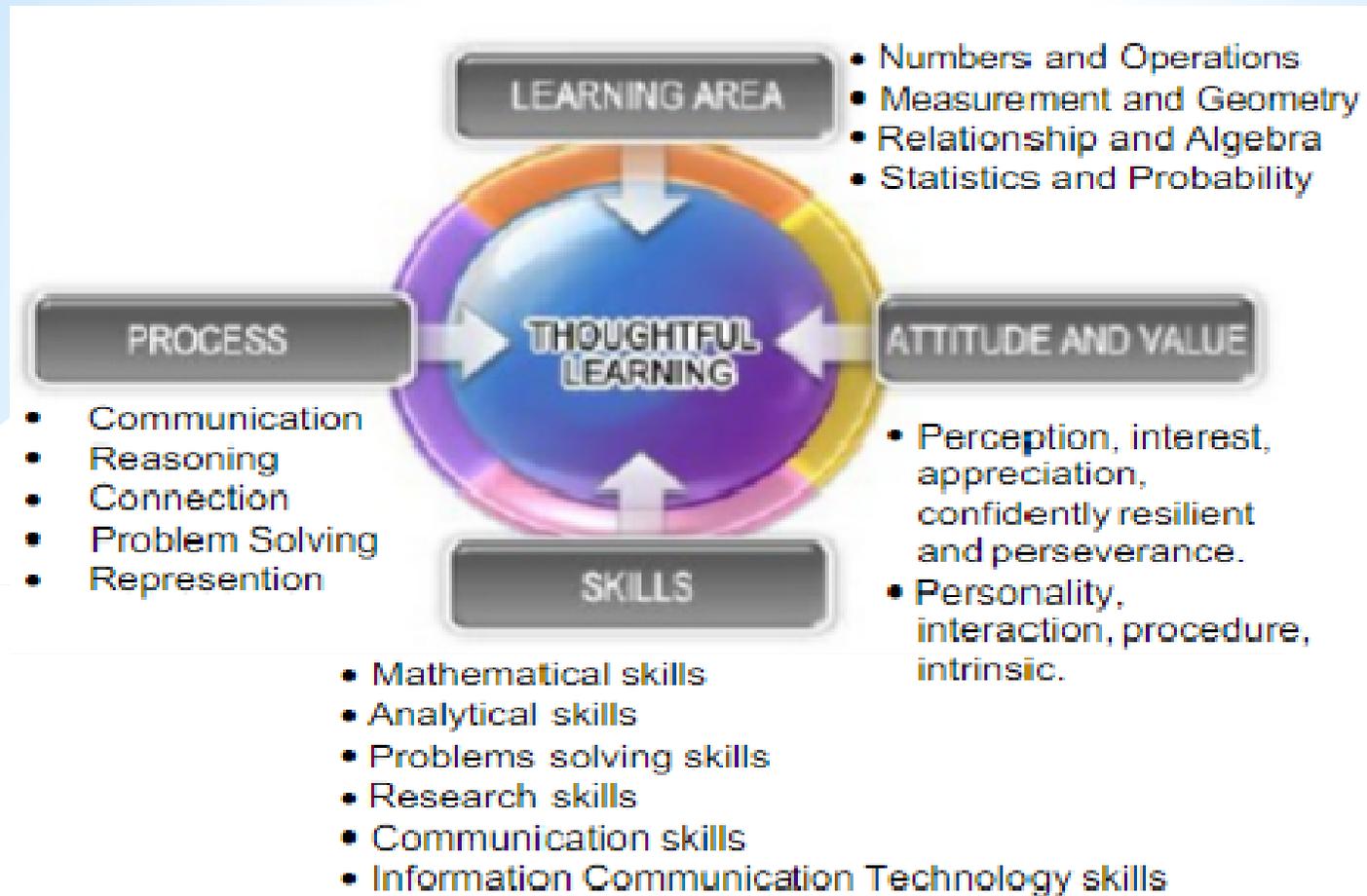


Figure 1: Malaysia's Mathematics Curriculum Framework

Research Objectives

- 1- To examine the effectiveness of cooperative techniques in subtraction operation in mathematic subject.
- 2- To examine the levels of children's skill in subtraction operation in mathematic subject.

COOPERATIVE LEARNING

- The implementation instruction of this method is to carry out in small groups where each group members help each other, share ideas, and solve problems together.
- The significance of cooperative method in learning cannot be disputed anymore as evident in many studies concerning teaching and learning that has been applied to various subjects from early childhood up to college student level (Slavin, 2015).



Method

This paper aligns itself to the interpretive research paradigm utilising the case study research design, derived from the constructivism philosophy of learning which works on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in. This paradigm argues that research should be viewed subjectively not objectively.

SAMPLE

This focused subject of the study was subtraction operations applying the cooperative learning method with numbers 1 to 10.

This method is carried out in set groups combining various age and gender to work together (10 children who were divided into 2 groups).



The respondents are categorized into three levels, namely weak, moderate and skilled.

The Children's Levels in Subtraction Operation

Level	Score
Weak	0 - 3
Moderate	4 - 7
Skilled	8 - 10

The distribution of respondents according to age and gender were labeled as B5, B6, G5 and G6 (Key: B5 = Boy, 5 years old, G6 = Girl, 6 years old). While the subtraction levels were categorized as M1 = Weak, M2 = Moderate and M3 = Skilled.

(Respondents' subtraction ability levels before the intervention were 30% skilled, 20% weak and the remaining 50% moderate).

Respondents' Category and Level

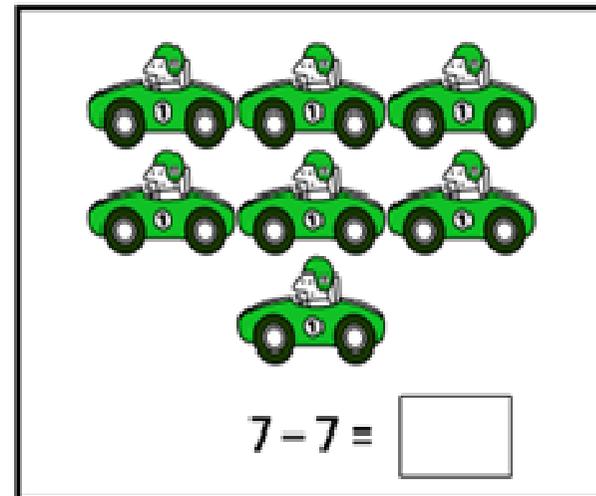
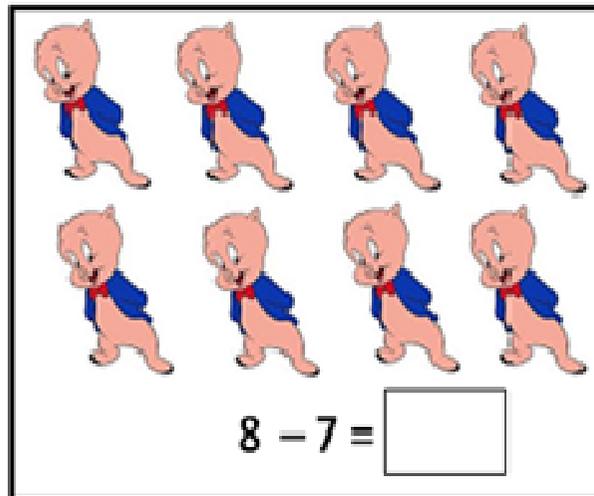
Respondents	Category				Level (Subtraction Operation)		
	B5	B6	G5	G6	M1	M2	M3
1	1				1		
2				1	1		
3	1					1	
4				1		1	
5			1			1	
6	1					1	
7				1		1	
8				1			1
9		1					1
10		1					1
Total	3	2	1	4	2	5	3

The examples of the questions

$$6 - 3 =$$

4 2 3

Example of subtraction of numbers from 1 to 10



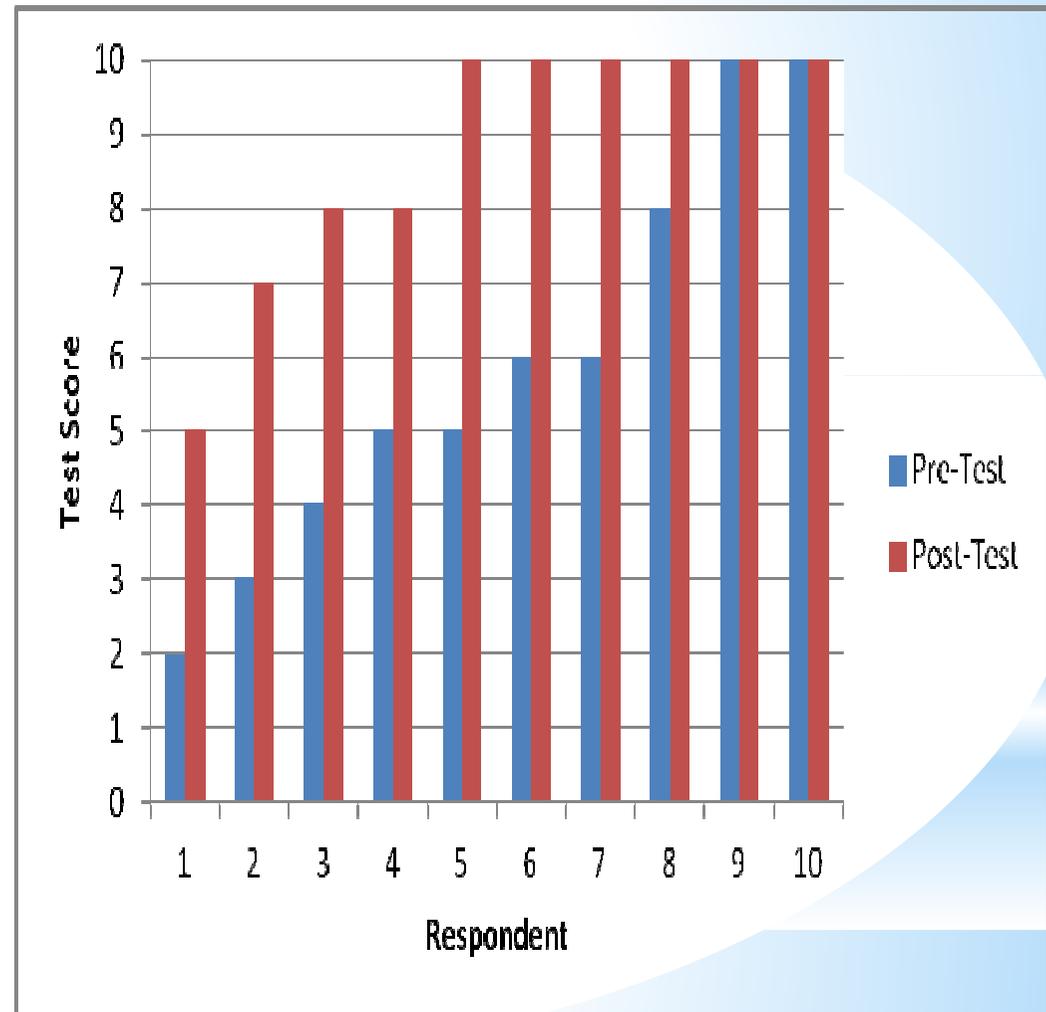
Examples of subtraction with pictures

FINDINGS

FINDINGS

Written test scores before and after

Respondent	Score		% Increase
	Pre-Test	Post-Test	
1	2	5	30
2	3	7	40
3	4	8	40
4	5	8	30
5	5	10	50
6	6	10	40
7	6	10	40
8	8	10	20
9	10	10	0
10	10	10	0
Average	5.9	8.8	29



Out of the 10 respondents, 8 of them had increased score. Two respondents which had full score in the instruction method maintained the same full score in cooperative learning method. Therefore the increased in subtraction ability is 80%. Overall the score increased from 5.9 to 8.8 which represent an increase of 29%. The scoring is from 0 to 10.

There existed some form of cooperation among the respondents. It was apparent that the skilled ones helped the weak ones. Respondents who are weak had the opportunity to learn better with their skilled peers.

The 10 respondents are happy with the cooperative learning method and expressed interest in learning mathematics by this method.

DISCUSSION

Children at preschool age can work as a team to solve mathematical questions. In fact they performed better than before they were in cooperative learning environment.

The cooperative method significantly impacted the results of subtraction operation. It was apparent that children communication skills are the necessity that needs to be emphasized in adopting cooperative learning method in order for the children to be thoughtful learners.

In teaching and learning, beside techniques and methods, strategies play a major role which contributes to success or failure of students to master knowledge and to understand topics and concepts taught to them.

CONCLUSION

The use of cooperative methods clearly shows that the children demonstrated better achievement compared to when they were using traditional method in doing subtraction operation.

Thus, teacher-centered learning approach is not recommended as it emphasizes drilling and memorization instead of understanding. This will impact not only the students' cognitive but also their emotional level, thus endangering them to lose interest in learning. The worst implication is that it will lead to drop out and hate schooling or the education system.

The *Laporan Jemaah Nazir* in 1988 found that delivery and teaching methods affect students' understanding of mathematical concepts. Specifically, the findings of the study affirmed that cooperative method is the effective method to instill mathematical thoughtful learning in students from early age.



THANK YOU

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