

# Increasing the Mastery of Multiplication for Primary School Students

## Increase the Mastery of Multiplication by Pupils

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**Abstract:** Multiplication is a very important skill driven by pupils to enable them to learn maths. Good mathematical dominance requires pupils to dominate the multiplication well. Pupils' failure to dominate the multiplication will affect the achievement of mathematical subjects. In this regard, the study was conducted to know the pupils' ability to dominate various methods of multiplications to increase their multiplication. The design of this study is a study of action. Based on a diagnostic test conducted on 27 pupils of Year 4, there is a pupil who can dominate the multiplication of two until nine. To curb this problem, the researcher took necessary measures to carry out data collection through questionnaires, pre/diagnostic tests, follow-up actions and a post-test. From this study, I hope that pupils can dominate the way to improve their performance in mathematical subjects. In addition, I hope that pupils can compete with their friends and be able to follow learning sessions in any normal classroom. There is an increase in the post test results compared to the pre/diagnostic tests.

**Keywords:** mastery of multiplication, mathematical achievements.

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### 1. INTRODUCTION

Multiplication is a basic skill besides addition, subtraction and division. Pupils need to master the four basic skills for the mastery of mathematics. In addition, the multiplication affects the mastery of mathematics. Unfortunately, this recent mathematical decision at the national level is alarming the whole community. The alarming situation does not only occur at school level but also at the national level. One of the factors of pupils' achievement was not satisfactory as pupil failed to memorise the multiplication. Pupils fail to memorise the multiplication that they should have learnt.

According to the study by Mohd Fadzli and Fuziyah (2011), a teacher's pedagogical practice which adopts the method of memorizing is similar to the old curriculum policy (KLSM). Teachers who taught memorization method in mastering multiplication found that pupils were not interested in memorizing thus affecting the mathematics performance thoroughly. Unfortunately, pupils are still unable to dominate the multiplication with the methods of memorization. The practice of memorization is a problem for pupils and as for the outcome, pupils are not interested in empowering mathematics.

Therefore, many initiatives and actions were taken to address the problems of unsatisfactory mathematical results. At school level, teachers need to identify pupils' problems and surely the majority of pupils who do not dominate mathematics have problems in multiplication. Teachers should be creative and resourceful in order to tackle pupils' learning problems. One of the ways is to attract pupils to dominate the multiplication by using visualization method. In studies related to the visualization method by Maslinah (2016), it was stated that the methods of visualization can help pupils to solve learning problems in mathematical teaching. Therefore, teachers have to use a variety of methods to attract the pupils' best interest in mathematics.

Furthermore, this study is implemented to solve the problems of pupils who do not dominate well. Looking at the reflection of the unsatisfactory mathematical results, various teaching techniques are planned and implemented to help students dominate their multiplication.

In addition, upgraded teaching techniques can also be inserted while using video screenings related to multiplication. According to Mohd Fadzli and Fuziyah (2011), the study used appropriate and effective technology in teaching which could help in teaching to enhance pupil's learning and mastery in mathematics. This study is suitable for pupils who love to sing songs which have animated elements. In a multiplication context, the singing video shown should be attractive and related to the multiplication that teachers would like to implement to achieve teaching objectives.

Multiplication can also be assisted by the game method that attracts pupils' interest to learn. In 2014, Rambely and Shahabudin had studied related games that were given the name of the multiplication games, unfortunately studies found that the games in the multiplication did not greatly make changes to the pupil's achievement. Teachers can find the type of games that fits their own pupil's interest. This is because pupils especially primary school pupils like teaching that apply games in teaching and learning.

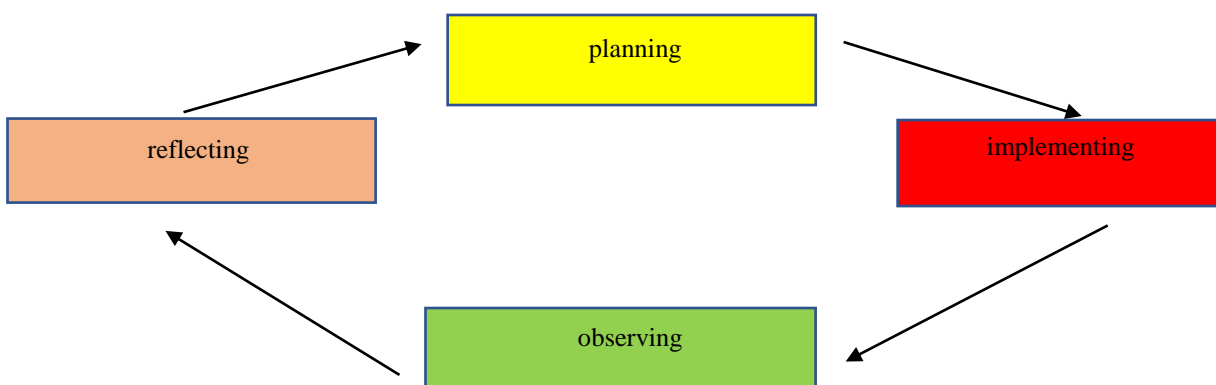
The multiplication method is a method associated with increased basic skills and also recurring additions. In order to complete the multiplication compartment, pupils have to dominate the basic addition operations. Furthermore, pupils may also use recurring additions to find answers for subsequent multiplication. This method helps the pupils who reject or are not interested in memorising. This was strengthened by the study of Zainudin Abu Bakar and Mohd. Rashidi Mat Jalil (2007) which mentioned the multiplication method has given rise to the dominance of pupils among the students in Year 4.

After being exposed to various teaching techniques in multiplication, observations were done and analysis was made to see how effective was the teaching techniques to the pupils' dominance. It can be said that it helps to increase the mathematical results of the pupils involved.

## 2. METHODOLOGY

This study has selected a study design which is an action study using quantitative method. The rationale for the selection of design is to gauge the dominance of pupils using pre-test instruments and post-test testing.

Meanwhile, the model chosen in implementing this study is the Lewin Model (1984). There are four steps in the Lewin Model which should be implemented in action studies. The four steps are reflecting, planning, implementing and observing. This recurrence or cycle will continue from the first step to the fourth step until the research problem can be solved. According to the instructor i.e. Education and Yogyakarta (2008), it was mentioned that the evaluation of class action that applied the Lewin Model could help teachers to identify problems and ultimately take actions to produce quality learning and to achieve the objectives of the planned learning.



Lewin Action Review Model

## International Journal of Novel Research in Education and Learning

Vol. 7, Issue 2, pp: (24-28), Month: March - April 2020, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

For this study, a questionnaire set was used as the research instrument. Each pupil would need answer the questionnaire given to see their response to the disclosure of the method they have learned before. The questionnaire would be answered when the pupils involved were given a follow up after answering the pre/diagnostic test. This questionnaire was shaped by using the four-Likert scale, which is indicated by 4 as strongly agree, 3 as agree, 2 as less agree, and 1 as disagree. The selection of each of these enhancements will show the pupils' choice for each item questioned to them in relation to methods and multiplication. The selected items are appropriate to the levels of pupils who were tested in terms of language and the content.

The instrument of test paper used during the first week of the study was the pre-test or diagnostic tests distributed to all pupils who were present in class 4 Ermin. After testing them with pre-test, they were given follow-up actions by teachers with various methods of multiplication which are suitable for multiplication of 2 until 9. After the pupils are given a follow-up action, they will do a re-test with a post-test to see the increase obtained in the multiplication mastery among them. Before the post-test is conducted for the pupils, the teacher guides the pupils by using the squared multiplications method. Pupils will be exposed to various approaches using the singing method, to facilitate them to memorize multiplications such as multiplication of 2, 3 and 4.

Meanwhile, for multiplication of five the teacher will guide the pupils using a clock face which really helps the pupils to answer the squared multiplication of 5. The method of squared multiplication starts from zero to require the pupils to make 2 repetitions to fill each of the provided squares. It goes the same for multiplication of 3, pupils will use answers from subtraction 2 to help fill in the multiplication.

**First week** : Pre/diagnostic exam.

### Action of the first month (April)

1. Weak pupils will be gathered in a group.
2. Five minutes each class will be given to memorise the multiplication.
3. A multiplication exposure in a form of YouTube animated is to be shown to strengthen the multiplication skills as pupils should sing the song played by the YouTube. This is to attract students to learn and love the learning of mathematics.
4. A recurring add-on method is to complete a simple multiplication such as multiplication 2, 3 and 4.

### Second month action (May)

1. An average pupil who has dominated the multiplication will guide weak pupils in the pairing memorization.
2. Exposure to multiplication from the clock face begins with a multiplication of 5 to help to get multiplication of 6, 7 and 8.
3. Exposure to multiplication by using fingers for multiplication of 9.
4. The exposure of the method of multiplication box to the pupils is by asking them to practise in that form where each class starts in individually, as well as in group for strengthening purpose.

**Last week** : 1. Test post  
2. Survey

## 3. FOCUS OF THE STUDY

This study focuses on increasing the multiplication for pupils. After being exposed to various techniques and strategies to help strengthen the pupils' multiplication, they were given various exposures to be practiced in the dominance of multiplication.

According to the current enrolment of pupils that are exposed to information technology, they are also exposed to interesting activities which were planned by the teachers to attract their interest by using animation in songs to help increase the multiplication skills.

#### **4. RESEARCH OBJECTIVES**

The study was implemented to identify the increase in the pupils' multiplication by looking at the findings of pre-and post-tests conducted in teaching and learning using a variety of appropriate techniques and strategies with the pupils' surveyed levels.

In addition, another objective of this study is to identify the increase in the multiplication in the pupils by using an effective approach or method to assist in the dominance of multiplication.

#### **5. STUDY ISSUE**

Is there a difference in the level of multiplication for pupils by recollecting before and after learning using various techniques and strategies conducted?

#### **6. GOAL SET**

A total of 27 pupils from 4 Ermin class of Saint Thomas National School, Kuantan were the respondents which all of the pupils are male. The selection of respondents are important to provide feedback to the aspects required for this study as the class selected for this for this study can be categorized in the modest students category and not all of the pupils are weak in mathematics.

#### **7. FINDINGS OF THE STUDY**

The findings showed that there is an increase in the pupils' multiplication. A total of 18 pupils from 27 pupils showed an increase in terms of their share of multiplication. There were only 2 pupils who have decreased the per cent of mastery and 9 pupils were still standing for their pre and post-tests.

Thoroughly, 18 respondents increased their dominance against pre-test before the various multiplications were exposed to them. Therefore, the techniques and strategies planned and implemented by the teachers have an impact on the increase in the pupils' multiplication. The average mean of pre 53.9% test increased to 74.7% when the post test was carried out. This shows an average percentage increase of 20.8%.

The finding of questionnaires found that most pupils choose not to agree with learning with a very tedious method. Most of the respondents prefer a method for each multiplication to be unconfused to apply in learning. Most of the pupils also chose not to be interested in learning mathematics if there are no interesting activities.

The method of the multiplication box helps pupils to multiply the multiplication. This shows the method of the multiplication is interesting and can help the pupils to dominate the multiplication well. Majority of pupils chose to agree that the skills multiplied by the method of multiplication make it easier to understand the subsequent learning. In fact, most of the respondents chose to multiply by using the "multiplication box" method. The pupils also highly agreed and most of them chose the multiplication box methods to help them to multiply easily.

#### **8. DISCUSSIONS AND SUGGESTIONS**

The results are very encouraging where the results of the post-test shows increasing high scores. Therefore, the techniques that have been planned and implemented should be continued or applied to the entire school. In fact, all schools in Malaysia are encouraged to execute the practice that was done to improve pupils' multiplication. An appropriate method to attract any pupil's interest should be carried out so that pupils are not bored to master the basic skills of multiplication that they feel are hard to master. Teachers' wisdom is needed to plan a creative teaching and learning practice to attract pupils to further dominate the multiplication.

The pre and post test questions were given in the form of a multiplication in order to help pupils to apply what they were trained to give accurate answers. The selection of methods and patterns of question are also important to make pupils feel confident to give answers after being trained in teaching and learning. According to the results by Abu Bakar and Mat Jalil (2007), there was an increase in the comparison compartment method compared to the traditional memorization method. The method selection approach also plays a part in the pupils' multiplication. The method of the multiplication provides an opportunity for pupils to give accurate and correct answers rather than responding to the questions given. This

is due to the addition operation associated with the multiplication which can be applied by pupils while completing the multiplication.

In addition, proposals for further study of research can also consider the elements of singing or playing games which can attract pupils' interest and can increase the dominance of the their multiplication.

## 9. CONCLUSION

The study has found that a rise of achievement in acquiring multiplication by pupils. The use of various techniques and strategies planned and implemented by teachers greatly helped to increase the dominance of the pupil ' multiplication. According to the study by Moses W. Ngware et al. (2015) a teaching approach applied by quality teachers will produce good and excellent students' decision. The test scores for 18 students showed an increase with an average increase of 20.8%. The average mean for a pre-test of 53.9% at first has an increase of 74.7% in the post-after test. This shows the methods or strategies which were planned and implemented by the teachers in order to increase its multiplication have good impacts on the enhancement of the pupils' multiplication.

## REFERENCES

- [1] Abu Bakar, Z. & Mat Jalil, M. R. 2007. Kaedah Petak Sifir: Kajian Perbandingan Matematik Tahun 4 Dalam Penguasaan Fakta Asas Darab. *Jurnal Pendidikan Universiti Teknologi Malaysia*, 12(Oktober 2007), 91–98.
- [2] Maslinah, L. 2016. Keberkesanan Kaedah Visualisasi: Meningkatkan Keupayaan Menyelesaikan Masalah Matematik Berayat. *Proceedings of the ICECRS*, 1(1),687–698. doi:10.21070/picecrs. V 1i1.542.
- [3] Mohd Fadzli, A. & Fuziyah, M. 2011. Pembinaan perisian pembelajaran berpandukan komputer (PBK) jenis tutorial berasaskan teori konstruktivisme Matematik tingkatan satu – “Fraction” *Journal of Science & Mathematics Educational*, 2(June), 51–66.
- [4] Moses W. Ngware Email author James Ciera Peter K. Musyoka Moses Oketch. 2015. Quality of teaching mathematics and learning achievement gains: evidence from primary schools in Kenya. *Educational Studies in Mathematics*, 89(1), 111–131.
- [5] Pengajar, S., Pendidikan, J. & Yogyakarta, U. N. 2008. Staf Pengajar Jurusan Pendidikan Akuntansi – Universitas Negeri Yogyakarta 87 VI (1), 87–93.
- [6] Rambely, A. S. & Shahabudin, F. A. 2014. Permainan Matematik Sifira Memupuk Minat Terhadap Pembelajaran Matematik (Instilling Interest in Learning of Mathematics through Mathematical Game Sifira). *Jurnal Pengukuran Kualiti dan Analisis*, 10(2), 111–119. Retrieved from AN MATEMATIK SIFIRA MEMUPUK MINAT TERHADAP PEMBELAJARAN MATEMATIK
- [7] Zainudin Abu Bakar & Mohd. Rashidi Mat Jalil. 2007. Kaedah Petak Sifir: Kajian Perbandingan Matematik Tahun 4 Dalam Penguasaan Fakta Asas Darab. *Jurnal Pendidikan Universiti Teknologi Malaysia*.