



Mastery of Basic Mathematics Facts in Slow Learner Children

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Abstract

As one of the mathematics objects, the basic facts of mathematics are the primary material that students must master. The facts of addition and subtraction should have been taught in the first level and mastered by the end of the second level. The multiplication and division facts should have been taught at the third level and could be mastered at the fourth level. The primary fact mastery phase consists of a counting phase, a reasoning phase, and a mastering/advanced phase. Mathematics as science should also be accepted by all students regardless of their characteristics, background, or physical needs. They must have the opportunity to learn and be supported to learn mathematics, one of which is a child with special needs slow learner. This research aims to describe the mastery of basic math facts in slow learner children.

This is qualitative research, with research subjects totaling three slow learner students of Melana Junior High School, Semarang. Subjects are selected by purposive sampling. Data are collected through tests. Time triangulation is used for data validation. Data collection is carried out three times with a gap of 2-3 weeks. The data analysis technique in this research is data reduction, data presentation, and concluding.

The research results conclude that the slow learner children are not yet proficient in mastering the basic facts of mathematics. There are slow learner children who can reach the reasoning stage in mastering basic facts, but more are still in the counting stage. Slow learner children who have good basic fact skills have better grades in mathematics. The addition facts are the most effortless facts to master, while the division facts are the most difficult facts to master. Some students can master multiplication facts better than subtraction facts, but some can master subtraction facts more than multiplication facts.

Keywords: *Basic Math Facts; Slow Learner; Equivalence; Math Standard*

Introduction

Mathematics is essential to learn and can be used to solve problems in various aspects of life. According to Cockcroft, mathematics needs to be taught to students because (1) it is always used in all aspects of life; (2) all fields of study require appropriate mathematical skills; (3) it is a means of communication that is strong, concise, and clear; (4) can be used to present information in a variety of ways; (5) improve logical thinking skills, accuracy, and spatial awareness; (6) give satisfaction to the effort to solve challenging problems (Abdurrahman, 1999, 253).

One of the basic mathematics materials is about the basic facts of mathematics. Basic facts are defined as a combination of addition and multiplication of numbers under ten (Walle, 2013). Common Core State Standards for Mathematics (CCSSM) determine the standard of mathematical ability at each level (Kling, 2014). Based on Common Core State Standards Initiative (CCSSI, 2010), the concepts of addition

and subtraction should have been taught at the first level and master addition and subtraction facts at the end of level 2. The concepts of multiplication and division should have been taught at the third level, and able to master 1-digit facts (up to 9×9) at level 4. However, according to CCSSI, 1-digit facts are memorized by the end of level 3. Mastery of basic facts means that a child can respond quickly (approximately 3 seconds) without doing something inefficient, such as counting one by one (Walle, 2013).

Basic facts need to be mastered by a student. The ability of students to mentally calculate the facts of addition, subtraction, multiplication, and division correctly and in a relatively fast time also shows mathematical fluency (Frawly, 2012). Lukmana (2018) explains that term mathematical fluency as automation. This means that students quickly and accurately solve problems involving addition, subtraction, multiplication, and division facts. Mathematical skills such as operations on fractions, factoring algebraic forms will undoubtedly become more accessible and more straightforward with the automation of addition and multiplication facts (Woodward, 2006). Even Greaney (2015) states that automation allows students' mental space to solve complex mathematical problems. Therefore the ability to solve problems related to basic mathematical facts is too important to ignore.

Mastery Basic facts should be considered. Because the higher the level of students, the more complicated and complex the problems encountered. Of course, if a student has not completed the primary problem, it will cause other problems in the future. Lukmana (2018) explains that these skills related to basic mathematical facts are often neglected. Many mathematics teachers at the elementary level focus more on solving math problems without paying enough attention to mastering basic facts. As a result, many teachers find that students tend to develop problem-solving skills without being accompanied by efforts to develop fluency in basic facts (Krudwig, 2003). This can impact the weak fluency of students' mathematical facts and will lead to the emergence of obstacles when students solve mathematical problems.

The principle of equality should be the basis for the implementation of education. With this principle, students with special needs should receive the same treatment for mathematics. However, it is undeniable that in its implementation, various challenges arise. There are still many children with special needs who do not have the opportunity to receive an education that is their right (Hayati, 2015). "All students, regardless of their characteristics, background, or physical needs, should have opportunities to learn and be supported to learn mathematics" (NCTM, 2000, p. 12).

Slow learner children are one of the children with special needs. Slow learner children have IQs below average. Cooter & Cooter Jr dan Wiley (Triani dan Amir, 2016) explain that they have an average IQ of 70-90, an IQ level that allows them to study well. They tend to have a low level of mastery of the material, even though the material is a prerequisite for continuation in the next lesson, so they often have to repeat (Sudrajat, 2008).

They (slow learners) are not classified as mentally disabled children. They have low learning achievements or below the average child in general in one or all academic areas. Students who are slow in the learning process usually need more time than a group of other students who have the same level of intellectual potential (Suryana, 2018).

Based on its explanation, this research examines the level of mastery of basic math facts in slow-learner children.

Method

This research is qualitative. The subjects of this study are three slow learner children at the junior high school level. The technique used in determining the subject is purposive sampling. Budiyo (2018) explains that purposive sampling is characterized by selecting research subjects selected by using certain considerations held by the researcher. The place of research is Melana Junior High School Semarang. Melana Junior High School Semarang is a school for children with special needs.

Data are obtained through tests. The test is used to measure the stages of mastering basic facts. In practice, the researchers conduct data collection three times at three different times with a gap of 2-3 weeks. The test is conducted orally and twice (initial test and follow-up test). The initial test is used to determine whether the child is proficient or not. If it is declared not proficient, follow-up test is carried out to

determine basic facts' level of mastery. Data validation use triangulation. Time triangulation is the technique used in this study. Data analysis includes data reduction, data presentation, and concluding.

To determine the level of mastery of basic mathematical facts, there are several levels of student mastery. Baroody (2006) describes the three levels, namely the counting phase, the reasoning phase, and the mastering phase.

Table 1: Level of Mastery of Basic Facts

Phase	Description	Indicator
Phase 1: counting	Counting using tools, for example, fingers, coins, candy, fruit, or counting verbally	<ul style="list-style-type: none"> • Unable to answer 75% of the total questions correctly and quickly. • Not Mastering 50% of existing reasoning techniques/strategies.
Phase 2: reasoning	The reasoning strategy is to use known information and then logically determine the combination of unknown numbers. Thus, every basic fact has a strategy of reasoning.	<ul style="list-style-type: none"> • Unable to answer 75% of the total questions correctly and quickly. • Mastering 50% of existing reasoning techniques/strategies.
Phase 3: Mastering / Proficient	Students efficiently (fast and accurate) produce answers.	<ul style="list-style-type: none"> • Can answer 75% of the total questions correctly and quickly (less than 3 seconds)

Results and Discussion

Based on the initial test conducted orally, the following recapitulation is obtained.

Table 2: Recapitulation of Initial Test

Total of questions 20	Subject 1			Subject 2			Subject 3		
	Data 1	Data 2	Data 3	Data 1	Data 2	Data 3	Data 1	Data 2	Data 3
Total of correct answers	7	5	6	8	6	5	16	15	15
Total of wrong answers	13	15	14	12	14	15	4	5	5
The total of correct answers is under 3 seconds	2	3	3	2	3	2	12	13	14
Percentage	10%	15%	15%	10%	15%	10%	60%	65%	70%
Conclusion of the test (proficient / not)	Not Proficient			Not Proficient			Not Proficient		

These results indicate that the three subjects are not mastery in basic facts because the number of answers has not been less than 3 seconds is still below 75%. Therefore, it is continued with further tests. Based on the follow-up test, the following recapitulation is obtained.

Table 3: Recapitulation of Follow-Up Test

Facts	Reasoning strategy	Mastering / not mastering yet		
		Subject 1	Subject 2	Subject 3
Addition	Facts one is more than and two is more than	Not yet	Mastering	Mastering
	Addition with zero	Mastering	Mastering	Mastering
	Using five as the starting point	Not yet	Not yet	Not yet
	Making ten	Not yet	Not yet	Mastering
	Above 10	Not yet	Not yet	Not yet
	Duplicate	Not yet	Not yet	Mastering
	Close to double	Not yet	Not yet	Not yet
Subtraction	Subtraction as Addition	Not yet	Not yet	Mastering
	Solving by converting to the addition form	Not yet	Not yet	Mastering
	Downing to 10	Not yet	Not yet	Not yet
	Taking from 10	Not yet	Not yet	Not yet
Multiplication	Knowledge of multiplication is repeated addition	Not yet	Mastering	Mastering
	Multiplication by two	Not yet	Mastering	Mastering
	Five	Not yet	Not yet	Mastering
	Zero and One	Mastering	Not yet	Mastering
	Double	Not yet	Not yet	Mastering
	Good Nine	Not yet	Not yet	Not yet
	Using known facts to explain other facts.	Not yet	Not yet	Not yet
Division	Think multiplication	Not yet	Not yet	Mastering
	Solving by converting to multiplication form	Not yet	Not yet	Mastering
Percentage of strategies mastered		10%	20%	70%
Mastery level summary		Calculating	Calculating	Reasoning

Mastery of basic facts requires practice in the form of strategies to help smooth it out. Existing strategies require a reasonably high reasoning ability. The table shows mastery of basic facts in the counting stage for the two subjects researched (S1 and S2). The two subjects still often use their hands to count. The fact of subtraction becomes complicated when subtracting 2-digit numbers because the number of fingers is only 10. The two subjects sometimes still disorder numbers from large to small. This becomes another problem in subtraction facts. Existing strategies are still common to both subjects. Modification from multiplication to repeated addition, from subtraction to addition, from division to multiplication is also still common. This follows the explanation of Nahir et al. (2009), which states that one of the characteristics of slow learner children is their limited ability to do abstract things and require conclusions.

Mastery of basic facts is already at the reasoning stage for one subject (S3). Initial test results for this subject are good but do not meet the criteria for being advanced yet. There are many strategies that the subject is mastered, but still, the subject is not mastered yet. In modifying the form, the subject is good enough even though it still takes longer. The ability of this subject is exciting because there are slow learner children who can arrive at the reasoning stage. Similar research is conducted by Richardo (2018) about the creativity level of slow learner children. Richardo's research concludes that the creativity of slow learner children in solving problems is at level 1 (less creative) and level 0 (not creative). The author assumes that S1 and S2 are at level 0 while S3 is at level 1 (less creative).

The results of a study conducted by Coddington et al. (2016) at the University of Minnesota shows that the profile of basic mathematical fact mastery skills can be used to predict mathematics learning outcomes for elementary and junior high school students. In their study, Nelson et al. (2016) conclude that when students are successful in the single-digit math basic fact test, they tended to get good results on the

national mathematics exam. Research conducted by Jordan et al. in 2005 - 2008 indicated that knowledge of early numbers predicts success in school more than other cognitive measures, such as verbal, spatial, or memory skills or reading skills (Walle: 2013). The results of initial observations on the subject also show something similar, S3 has a higher level of mastery than S1 and S2. The data is relevant to the results of initial observations, which show that S3's ability in school mathematics is better than S1 and S2. These findings can trigger that slow learner children with specific treatments can get higher math results than most of the existing slow learner children.

Based on the results of the researchers' observations when conducting the test, other data are found. Of the four basic facts, the most easily mastered by students and subtraction is one of the facts that is quite difficult for the subject to master. Multiplication facts can also be mastered as a subject but are not as easy as an addition. Some subjects can master the facts of subtraction more than multiplication facts, but some subjects can master multiplication facts more than subtraction facts. The fact of division is the most difficult fact for the subject to master. On several occasions, some subjects cannot calculate the result of division, and some cannot determine the result of subtracting two digits (e.g., 12-7).

Conclusion

The research results conclude that slow learner children are not yet proficient in mastering the basic facts of mathematics. There are slow learner children who can reach the reasoning stage from mastering basic facts, but more are still in the counting stage. Slow learner children who have good basic fact skills have better grades in mathematics. The addition facts are the most effortless facts to master, while the division facts are difficult to master. Some students can master multiplication facts better than subtraction facts, but some can master subtraction facts than multiplication facts.

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