Arithmetic Assessment for Grade 2 Students with Disabilities di SLB Negeri Binjai North Sumatra

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Abstract. In the process of teaching and learning in schools, it is inseparable from the subject of Mathematics which is a compulsory subject for all students who must be studied. One of the branches of mathematics is arithmetic which deals with real numbers and the ability to count. For children with mental disabilities who experience obstacles in intellectual abilities will have difficulty in understanding mathematics subjects. To find out the abilities and needs of children with mental disabilities, it is necessary to conduct an arithmetic diagnostic assessment. Assessment is developed starting from the Core Competencies (KI) and Basic Competencies (KD) of the student's class to the pre-requisite arithmetic abilities of classification, series, correspondence and conservation. From the results of the assessment carried out both classically and individually, it can be seen that 4 students are in the Frustration level category in grades 2 and 1 as well as in arithmetic pre-requisite ability. From these results, there were 2 groups of abilities from the 4 students. So that mathematics learning in the class must be adjusted to the results of the assessment carried out by creating an individual learning program. By conducting an assessment, children with mental disabilities will get the right learning according to their abilities and needs so that children with mental disabilities can develop optimally, especially in the field of mathematics. This assessment can also be tested on children with special needs with other obstacles by developing instruments, especially at their level.

Keywords: Assessment, Arithmetic and Mental Impairment

1. Introduction

Mathematics as a compulsory lesson in school is sometimes a difficult thing for children and if this happens, it will be detrimental to the child himself. Mathematics as a compulsory subject contains the concept of numeracy lessons needed in everyday life so that it needs to be mastered thoroughly by children. Because mastering mathematics means that children have the ability to think logically, analytically and systematically as modalities to create efficient, effective and accurate solutions to the problems faced.

Given the important role of mathematics, every child is required to be able to master the subject matter at school. In mathematics subjects it consists of several branches and one of them is arithmetic. The ability to understand the arithmetic field of each student is not the same (Eriksson, 2011; Kusumaningrum & Suparman, 2020; Sperafico et al., 2021),, some have quite high abilities and some are very low. This is due to many factors, for example the ability factor of the student himself, the way the teacher delivers the material or due to family factors and environmental factors (Powell et al., 2020; Song et al., 2021).. This can indicate the weak mastery of children in mathematics. In relation to children with intellectual impairments or mental impairments, this problem can be even more complex because children with mental impairments are naturally born with limited intellectual abilities that have a direct impact on the learning process of mathematics.

To find out the shortcomings, abilities and needs of students in arithmetic skills, an assessment is needed. The definition of assessment according to Lewis in Saleh et al. (2021) is a systematic process of collecting data on a child that serves to see the abilities and difficulties that a person faces at that time, as material for determining what is really needed.

Arithmetic assessment is a systematic process of collecting a child's data on abilities in the basic concept of numbers including arithmetic pre-requisite ability, quantitative dimension ability and qualitative dimension. This assessment aims to find

out the abilities, obstacles and needs of the child in the field of arithmetic .(Beydoğan & Bayindir, 2010; Sievert et al., 2021; Vieira et al., 2021)

By conducting an assessment, we can find out the abilities and shortcomings of students in the field of arithmetic. From the results of the assessment, the teacher gets information on what material is appropriate and needed by students in the preparation of the learning program provided. Finally, children will get services according to their abilities even in the same class as other children.

In learning, especially mathematics subjects, the problems faced in the field occur to the incompatibility between the abilities of students with mental disabilities and the core competencies and basic competencies that exist. So that as a teacher, they must provide material according to the abilities and needs of the mentally impaired students. To obtain the abilities and needs of students with mental disabilities, it is necessary to conduct an assessment.

This compiled Arithmetic Assessment will be given to grade 2 students of SDLB - C and aims to: 1) Assist teachers in knowing students' basic abilities in arithmetic; 2) Assist teachers in finding the advantages that students have in arithmetic, 3) Assist teachers in finding student learning barriers in arithmetic, 4) Assist teachers in determining arithmetic learning programs, and 5) Assist teachers in determining appropriate learning methods.

This assessment is developed based on KI - KD Mathematics Subjects and pre-requisite abilities that must be met in learning arithmetic. The arithmetic aspects in this assessment are as follows 1) Quantitative Dimension, including the concept of numbers and counting operations, 2) Qualitative Dimension, including the application of the concept of numbers and 3) Pre-requisite Ability of Mathematics, including classification, series, correspondence and conservation.

In conducting assessments, instruments are needed that are developed based on relevant theories. Arithmetic assessment instruments are made based on the study of arithmetic pre-requisite theory and KI - KD mathematics lessons grade 1 and 2 SDLB - C. Media used must be adjusted to the subject under assessment.

2. Method

Based on the data obtained, this study uses a descriptive method. Whitney in (Niswaty & Arhas, 2019), explains that "descriptive research is fact-finding with proper interpretation. The descriptive method seeks to describe and interpret existing data, regarding existing conditions and relationships, ongoing processes due to ongoing effects, and appropriate to be able to uncover various phenomena in the field related to research. The purpose of description research is to make a systematic, factual and accurate description or picture or painting of the facts, properties and relationships between the phenomena investigated the position (status) of the phenomenon or factors and look at the relationship between one factor and another.

This research uses a qualitative approach. Qualitative research is research based on the philosophy of postpositivism, used to examine on the condition of natural objects (Sugiyono, 2017) . Based on the methods and approaches used in this study, data collection techniques were carried out through observation, interviews and documentation. In supporting the data obtained, instruments are developed that support based on KI and KD in mathematics subjects grade 1 and 2 as well as arithmetic pre-requisite abilities which include classification, series, correspondence and conservation.

The research was carried out at SLB Negeri Binjai at the SDLB grade 2 level of Tunagrahita which amounted to 4 students. The implementation of arithmetic assessment is carried out in two stages, namely the first stage classically and the second stage individually, with the following implementation procedures: 1) Stage I (Classical): a) Determining the class to be assessed, b) Providing assessment questions to all

students (questions are read out), c) Students write down answers or answer orally, d) Calculate scores and presentations of students' answers, e) Graph results, student achievements, f) Interpret and conclude student positions, and f) Make recommendations for stage 2 assessment. 2) Phase II (Individual): a) Preparing the room and preparing materials for the assessment, b) Creating a conducive atmosphere to start the assessment, c) Reading the assessment questions to the students, d) Students answering orally and in writing, e) The teacher explores the reasons for the students' answers, f) The teacher records the students' answers, g) Calculates the scores and presentation of the students' answers, h) Interprets and concludes the student's position, i) Make recommendations for the creation of programs according to the abilities and needs of students

The data analysis process begins with examining all available data from various sources, after which it reduces the data, presents the data and further draws conclusions and verification. The final stage of this data analysis is to check the validity of the data.

The classification of students based on test results is 1) Independent Level 75% and above (No problem) 2) Instruction Level Level 50% - 74% (Requires guidance) and 3) Frustration Level below 49% (Failed).

3. Results and Discussion

The identification process is carried out in 2 stages in doing class 2 arithmetic problems. The first stage is carried out classically and the second stage is carried out with an individual approach. In the second classical stage, the implementation is still carried out together with guidance by the teacher and for students who can already read and write students do it independently. The identification results in Table 1

Table 1: Phase 1 Identification Results

No	Subject Name	Score	Value	Classification
1	Bima	0	0	*Frustration Level*
2	Dzaky	0	0	*Frustration Level*
3	Salwa	0	0	*Frustration Level*
4	Chiko	0	0	*Frustration Level*

The identification of the classical stage is carried out twice. First, with a classical approach in the middle of the assessment, classroom conditions are no longer conducive because students feel uncomfortable with the question being read by only one person. Then the second stage is carried out with an individual approach, namely each student of one Teacher by getting the results as in Table 2:

Table 2: Phase 2 Identification Results

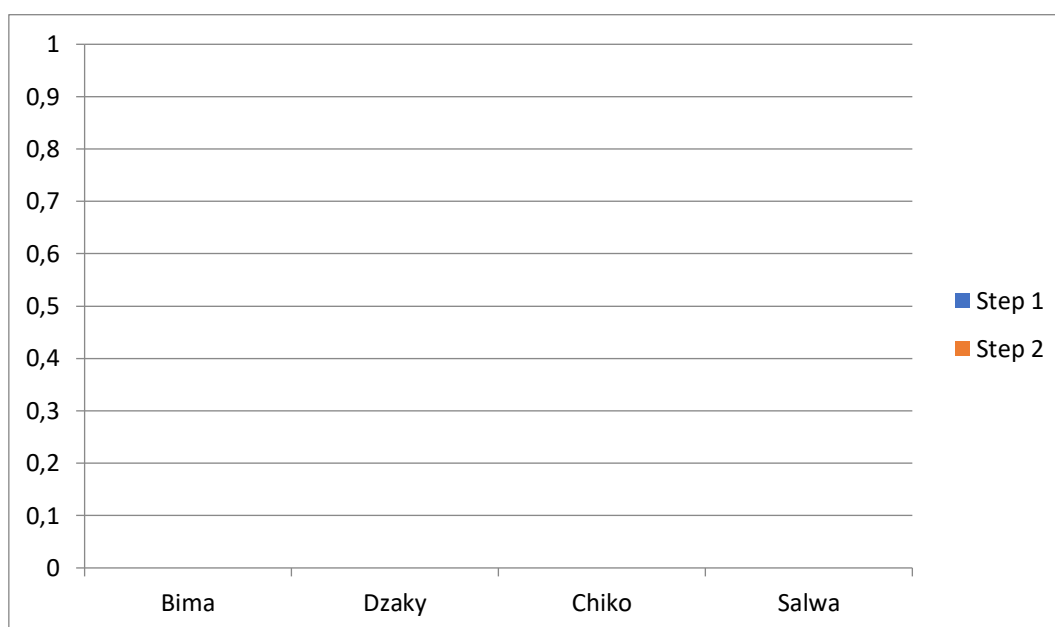| No	Subject Name	Score	Value	Classification
1	Bima	0	0	*Frustration Level*
2	Dzaky	0	0	*Frustration Level*
3	Salwa	0	0	*Frustration Level*
4	Chiko	0	0	*Frustration Level*

Figure 1: Identification Results of Stages 1 and 2

Data Interpretation :

Based on the graph above, it can be concluded that all students score below the grade point average where all students are unable to do the questions given in grades 2 and 1. Henceforth, all students need a more in-depth assessment so that the subject's abilities, difficulties and needs are known in arithmetic lessons.

After identification is carried out and results are obtained, and it is concluded that all students require arithmetic assessment. Such students have abilities below the RAT A-average of their class where they are unable to do the given questions.

The subject has abilities below the average of its class. The questions given for the assessment are questions below the class.

Table 3: Student Name: Bima

Assessment Results	Grade 1 Smt	Grade 1 Smt 1	Fication clasping	Arithmetic Pre-requisites		
				Series	Cordemic	Conservation
Number of Questions	25	20	20	15	5	10
Score	0	0	12	8	2	4
Value	0	0	60	53	40	40
Category/Level	*Frus tration*	*Frus tration*	*Instruc tion*	*Instruc tion*	*Frus tra- tion*	*Frustration*

Table 4: Student Name: Dzaky

Assess-ment Re-sults	Grade 1 Smt 2	Grade 1 Smt 1	Arithmetic Pre-requisites			
			Klasifi Give	Series	Cor-demic	Conservation
Number of Questions	25	20	20	15	5	10
Score	0	0	14	7	3	6
Value	0	0	48	46	60	60
Cate-gory/Level	*Frus tration*	*Frus tration*	*Frus tra-tion*	*Frus tration*	*Instruc tion*	*Instruction*

Table 5: Student Name : Chiko

Assess-ment Re-sults	Grade 1 Smt 2	Grade 1 Smt 1	Arithmetic Pre-requisites			
			Klasifi kasi	Series	Cor-demic	Conservation
Number of Questions	25	20	20	15	5	10
Score	0	0	8	4	1	1
Value	0	0	32	40	20	10
Cate-gory/Level	*Frus tration*	*Frus tration*	*Frus tra-tion*	*Frus tration*	*Frus tra-tion*	*Frustration*

Table 6: Student Name : Salwa

Assess-ment Re-sults	Grade 1 Smt 2	Grade 1 Smt 1	Arithmetic Pre-requisites			
			Klasifi give	Seria the	Cor-demic	Conservation
Number of Questions	25	20	20	15	5	10
Score	0	0	0	0	0	0
Value	0	0	0	0	0	0
Cate-gory/Level	*Frus tration*	*Frus Tration*	*Frus tra-tion*	*Frus tration*	*Frus tration*	*Frustration*
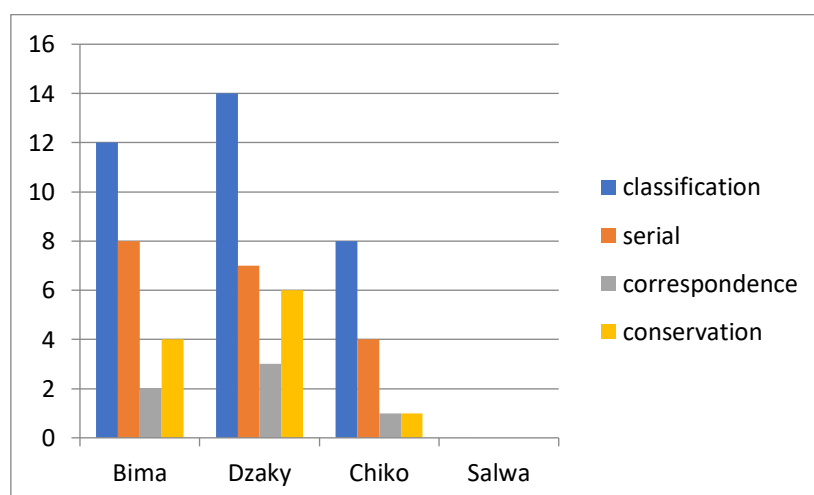
Figure 2: Arithmetic Pre-Requisite Capability Assessment Results

Interpretation Data :
Based on the results of the assessment, it is known:
Student Name : Bima
<u>The aspects mastered are:</u>
a. Numbering many objects to 10
b. Numbering 1 - 5
<u>Aspects that have not yet been mastered:</u>
a. Writing number symbols
b. Sort objects by number
c. The concept of summation in the abstract
d. Distinguishing the shape of objects
e. Comparing the weight of objects
f. Comparing multiple objects
g. Long - short concept
h. The concept of grouping objects

Student Name : Dzaky
<u>The aspects mastered are:</u>
a. Numbering many objects to 10
b. Numbering 1 - 10
<u>Aspects that have not yet been mastered:</u>
a. Writing number symbols
b. Sort objects by number
c. The concept of summation in the abstract
d. Distinguishing the shape of objects
e. Comparing the weight of objects
f. Comparing multiple objects
g. Long - short concept
h. The concept of grouping objects

Student Name : Chiko
<u>The aspects mastered are:</u>
none
<u>Aspects that have not yet been mastered:</u>
a. Menirukan voice and word
b. Numbering 1 -10
c. Counting objects
d. Writing number symbols
e. Sort objects by number
f. The concept of summation in the abstract
g. Distinguishing the shape of objects
h. Comparing the weight of objects
i. Comparing multiple objects
j. Long - short concept
k. The concept of grouping objects

Student Name : Salwa
<u>The aspects mastered are:</u>
None
<u>Aspects that have not yet been mastered:</u>
a. Mimic voices and words
b. Numbering 1 -10
c. Counting objects

d. Writing number symbols
e. Sort objects by number
f. The concept of summation in the abstract
g. Distinguishing the shape of objects
h. Comparing the weight of objects
i. Comparing multiple objects
j. Long - short concept
k. The concept of grouping objects

From the results of identification and assessment carried out both classically and individual in arithmetic ability in grade 2 students with mental impairments, there are 2 groups of students who have different abilities, namely between Dzaky and Bima with Chiko and Slawa even though all of them are in the *frustration level* category. Where these two groups of students have much different levels of ability.

Abilities possessed
a. 2 students have the ability to communicate with words and are able to imitate the voices and words spoken, namely Bima and Dzaky and have calmed down while studying.
b. For the other 2 students, namely Chiko and Salwa, they have not been able to speak and who is learning is still lacking.

Difficulties encountered
a. Writing number symbols
b. Numbering .
c. Sort objects and symbol numbers.
d. Understanding the concept of sums
e. Understanding the concept of weight - light, long - short, many few, large - small.

Students' learning needs
a. Intensive practice on writing number symbols
b. Intensive exercise mainly in the ability to speak.
c. Understanding the concept of symbol of numbers, addition and subtraction, weight - light, long - short, many few, large - small.

4. Conclusion

Based on the results of the assessment, it can be concluded that grade 2 students of SDLB - C as a whole have not been able to follow the material according to KI and KD at their current level or level below. Currently, the student's ability is at the ability in arithmetic prerequisites. So that in providing mathematics subject matter must be adjusted to the abilities and needs of the student. To be more effective, it is necessary to create an Individualized Learning Program in terms of arithmetic.

Based on the results of the assessment, we recommend that all students in grades 2 - C need intensive treatment and need special guidance through individualized learning programs, especially in the field of arithmetic. This assessment guide can be developed for children with special needs with other obstacles by adjusting to the KI and KD at the level described through the instrument.

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