

# **Identification of Students with Learning Difficulties to Count (Dyscalculia) With the Media of the Smart Counting Board at Sdn Jatiraga 1 Jatitujuh District, Majalengka Regency**

**By**

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## **Abstract**

This study aims to identify specific learning difficulties (dyscalculia) experienced by students at SDN Jatiraga 1 Jatitujuh District, Majalengka Regency, the purpose of identification is to make it easier to provide educational services for these students. The method used in this study is a descriptive method with a qualitative approach. Related to data collection through observation, interviews, documentation studies. Data analysis starts from data reduction, data display as well as conclusions and verification. The results of the study obtained that the factors that cause students to have difficulty learning to count (dyscalculia) come from students and outside students. After identifying the difficulties of learning to count (dyscalculia), students experience difficulties in solving the addition, subtraction, and multiplication problems given by the teacher. The actions taken by the teacher provide assistance so that students can understand or solve the questions given. Recommendations are given to class teachers to conduct assessments before compiling learning programs so that the programs provided are in accordance with the learning needs of students.

**Keywords:** Identification, Learning Difficulties, Dyscalculia

## **Introduction**

Children with Learning Difficulties (ABB) are children who experience problems in doing assignments academically specifically or generally. There are three types of terms that are related to difficulties, including learning difficulties (specific), slow learning (Slow Learner) and mental impairment. Children with general learning difficulties are usually

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characterized by low learning achievement for almost all subjects or average scores far below the grade point average so they have a high risk of staying in class. As evidenced by the average score of students in the class, there are still many under the Minimum Completion Criteria (KKM). Various literature that examines academic learning difficulties include: difficulty learning to read (Dyslexia), difficulty learning to write (Dysgraphia, and difficulty learning to count (Dyscalculia).

(Abdurrahman, 2012:3) "Learning difficulties refer to a group of difficulties manifested in the form of real difficulties in proficiency and use of the ability to listen, converse, read, write, reason, or ability in the field of study of mathematics. The disorder is intrinsic and is thought to be caused by the dysfunction of the central nervous system. Although a learning difficulty is possible to occur simultaneously with the presence of other disturbing conditions or various environmental influences (e.g. cultural differences, improper learning, and psychogenic factors). These obstacles are not direct causes or influences." Based on the opinions expressed above, learning difficulties are a condition where children experience difficulties in the learning process caused by central nervous brain dysfunction. The American Psychiatric Association (2013) in Khasana (2021:1) states that the incidence of specific learning difficulties is around 5-15% in school-age children in all different languages and cultures. Meanwhile, the incidence rate in adults is not known for certain, but it is estimated to be 4%. With symptoms: (Dyslexia) (a) reading is inaccurate and slow and requires great effort (example: reading one word with an incorrect or slow voice, hesitation, frequent guessing of words, difficulty voicing the sound of a word), (b) difficulty understanding the meaning read (example: being able to read accurately but not understanding the sequence, relationship, conclusion or deeper meaning of what is read), (c) difficulty spelling (example: adding, removing, or replacing vowels or consonants) (Dysgraphia) (d) Difficulty expressing into written form (e.g. poor paragraph organization, double grammar or punctuation errors in sentences, ideas that are less clear in writing), (Discalculia) (e) difficulty mastering the notion of numbers, facts of numbers, or counts (example: poor understanding of numbers, magnitude of numbers, and their relationships), and (f) difficulty in solving mathematical problems (example: severe difficulty in applying mathematical concepts, facts, or procedures for solving quantitative problems).

To find out the specific type of learning difficulties experienced by students, identification is needed to make it easier to provide educational services for students who experience learning difficulties.

Big Dictionary Indonesian (2000:256) "identification is the determinant or determination of the identification of people, things, and so on". The general definition of identification is to give a mark to a person, object or another, by distinguishing one component from another, so that the component is known and belongs to which group. Meanwhile, the purpose of identification in this study is an effort to recognize and determine students who are estimated to have learning difficulties (specific) especially learning difficulties with the type of Dyscalculia, determining the type and nature of difficulties that students have.

Before estimating or establishing the type of learning difficulties of Dyscalculia, there are several steps in identifying, firstly conducting class observations to see deviant behavior in learners when participating in arithmetic learning, secondly examining the vision and hearing of learners, especially those suspected of having learning difficulties (Dyscalculia) , thirdly interviewing the parents or guardians of students to find out deviant things in the family environment that may cause learning difficulties, fourth researching the results of the student's work whether it is an individual task or a group task, the fifth is doing a

documentary to strengthen the identification results, the sixth analyzing the results of the report card and ledger (list of grades) as reinforcement after the documentary that the student has learning difficulties (Dyscalculia).

One of the learners who will be identified in this study is a student who is categorized as having difficulty counting (Dyscalculia). (Azhari, 2017) the use of immature or inefficient problem-solving strategies so that learners with Dyscalculia disorder cannot learn arithmetic properly so that their memory does not remember smoothly.

## **Research Methods**

This study used qualitative methods with the holding of interventions that can facilitate the identification of students who have difficulty in counting (Dyscalculia). Data obtained through observation, interviews and documentation studies aim to explore information related to research.

Interviews were conducted with teachers as the first source of data to find out the difficulties experienced by students in counting to complete the results, interviews were conducted to parents of students, observation were made on students when numeracy learning was taking place in class. In order to complete the two data above, a documentation study was carried out by examining the report card value, test scores (daily, weekly, monthly, and semester).

Technical data analysis starts from data reduction, the purpose of sorting and selecting the necessary data then displaying data or grouping data so that the data obtained can be read specifically then conclusions are drawn in accordance with the research objectives.

## **Results of Research and Discussion**

### **Result**

There are several factors that can influence students to have difficulty learning to count (dyscalculia), namely internal factors and external factors. Internal factors come from learners and schools (teachers). Meanwhile, external factors come from the learning environment and parents of students. The internal factors that researchers encountered were that students did not understand the material presented and lacked motivation to learn, while teachers used the applicable curriculum. External factors are parents fully handing over the learning process to the teacher regardless of the abilities of the learners. Parents do not pay much attention to the progress of children's learning outcomes.

The results obtained in the study are related to the identification of specific learning difficulties (*dyscalculia*) in students at SDN Jatiraga 1 Jatitujuh District, Majalengka Regency as follows:

- 1) The first step is to hold a question and answer discussion related to the learning difficulties experienced by students. The discussion participants consisted of teachers, parents of students, principals and researchers. By the aim of finding problems with difficulty learning to count (dyscalculia) experienced by students and find out the best solution to overcome these problems. Based on the results of interview observations, and documentation, the following data were obtained:
  - a) The relationship of the Teacher with the learners while in school.

In the learning process, the relationship between teachers and students greatly affects the success of learning. Teachers are expected to be able to choose a learning approach that is in accordance with the material to be delivered.

In mathematics learning for grade III students at SDN Jatiraga 1 Jatitujuh District, Majalengka Regency, class teachers use several existing approaches, the approaches used include:

***(1) Complete learning approach***

The complete learning approach is a learning approach that emphasizes direct instruction. The results of observations made by researchers on the implementation of mathematics learning, students identified as dyscalculia seem to have difficulty in doing the problems given by the teacher, in the mathematics learning process (as for the questions given about the operation of calculating addition and subtraction with saving techniques) the teacher gives direction to the students, with the aim that students can solve the given questions. When students have difficulty in doing the questions, the teacher provides guidance on how to solve the problem gradually.

***(2) Problem solving approach***

When students have difficulty in doing the questions, the approach chosen by the teacher is by repeating the material related to the questions given with a simpler delivery. In addition, teachers also provide additional hours of mathematics learning for students outside of school hours. Teachers give directions to students in stages to do problems that students find difficult to do. Teachers also provide additional media to support learning for students and make it easier for students to do the questions given.

b) A form of collaboration between teachers and parents in identifying difficulties in learning to count (dyscalculia)

***(1) Communication***

Teachers dig up information from parents, related to the difficulty of learning to count experienced by students. This is done to match/confirm the data in the school with the abilities of students when doing questions at home. The results of interviews with parents found that the students had difficulty in learning to count (dyscalculia) so that the data on the learning difficulties of students in school were the same as those presented by the parents of students.

***(2) Parental Involvement in the home***

When students are given tasks that must be done at home, when doing homework, parents help in doing homework by repeating the material that has been delivered by the teacher at school, after that parents participate in guiding students in doing questions that are homework by the teacher. How to do these questions can use media that can help students easily do homework questions.

***2) Carry out identification***

Identification is carried out with the aim of obtaining information about the difficulties experienced by learners in learning to count (dyscalculia).

The results of the observations of students are weak in understanding the basic calculation concepts, especially addition and subtraction, this can be seen when the teacher explains the material given, about the operation of calculating addition, subtraction, division

and determining the difference. Students look very confused and unable to do the questions independently. Students ask the teacher for help to solve the problem.

During the learning process, the teacher always provides assistance when students have difficulty doing the questions given. As well as the teacher providing assistance by using a calculator to do the problem.

The results of the study document students have low learning achievement, this is one of the evidences that students have learning difficulties. The documents used to use the documentation are daily test scores, monthly test scores, and UAS (end-of-semester test) scores for mathematics subjects.

In order to complete the identification data, an assessment was carried out with the aim of learning to count (scaled) more clearly the difficulties experienced by students.

### **3) Confirming the Diagnosis**

The diagnosis is determined based on data obtained from the results of observations, interviews, documentation and assessment. From the data obtained, it is known that students have difficulty learning to count, especially in addition and subtraction calculation operations, this can be seen when making observations.

Based on the results of the assessment, students have learning difficulties in terms of subtraction, addition, division and determining the difference. When students are given counting question of 10 questions from addition, subtraction, multiplication to division. The weight of the question contains essay questions. However, students look confused and unfocused in doing the problem. So the researcher gives direction to students to do the questions that have been given.

For the first question ( $37-21=...$ ), students can answer the question but write the wrong answer. Should the answer be written ( $37-21=16$ ), students in writing the number 6 write in reverse writing. Furthermore, for the second question, students cannot add up the questions correctly, the questions given are as follows ( $25+25=...$ ). The answers written in the answer sheet are as follows ( $25+5=23$ ). When doing the question, students are not focused and very confused in doing the question. For the 3rd to 5th questions, students can do the questions correctly. For the 3rd question with a subtraction question as follows ( $23-13=...$ ) with the answer given ( $23-13=10$ ). The 4th question with multiplication questions as follows ( $4 \times 3=...$ ) with the answers given as follows ( $4 \times 3=12$ ). And for the 5th question, the multiplication question is given with different numbers as follows ( $2 \times 4=...$ ) students can multiply and write the answer exactly as follows ( $2 \times 4=8$ ).

However, when doing the 6th question with questions like the following ( $4:2=...$ ) students can determine the results of the division by mentioning the results, but when writing down the results students cannot write the answers correctly, the answers are written as follows ( $4:2=22$ ). Likewise, with the same question in the 7th question as follows ( $8:4=...$ ) students can determine the results of the division by mentioning the results, but when writing down the results students cannot write the answers correctly, the answers written are as follows ( $8:4=42$ ), this is due to the students' unfocusedness in doing the questions.

For the 8th question with the given question as follows ( $5+...=12$ ) students can determine the difference from the summation precisely and the answer as follows ( $5+7=12$ ). Likewise, in doing the 9th question, students can solve the same problem. The questions



given are as follows ( $4+\dots=9$ ) students can answer the difference in questions correctly as follows ( $4+5=9$ ). But it is different from the last question, students are not able to determine the difference from the deduction question. The question is as follows ( $10-\dots=4$ ) but the learner answers the question as follows ( $10-0=4$ ).

This diagnosis is also not only from the results of doing math problems but also from the results of assessment instruments as well. The results of the assessment instrument show that students:

- a). The ability to count students have difficulty in the process of counting in terms of subtraction or addition, both from integers of tens or hundreds, students also have difficulty using existing mathematical formulas in doing the math problems that have been provided.
- b). Weak in the concept of direction and time, learners have difficulty in determining the time, when asked students have difficulty in determining what time local time is.
- c). Memory impairment, students have difficulty in memorizing existing numbers, not only that students also have difficulty in memorizing mathematical formulas to do given math problems,
- d). Difficulty in distinguishing shapes, students have difficulty distinguishing space builds, flat buildings, geometric and numbers, especially when the flat build has a shape that is almost the same as a square with a rectangle, not only that students also find it difficult to distinguish the same number as the number 6 with 9. Therefore, it is determined that students experience specific learning difficulties (dyscalculia).

Based on the results of the observations and assessments carried out, researchers diagnose students with difficulty learning to count (dyscalculia).

#### ***4) Designing intervention programs***

After the diagnosis is determined, an intervention is held for students, this intervention aims to stimulate students in doing math problems to better understand how to count or the process of doing math problems, not only researchers who intervene but from the school have also intervened with these students. The intervention carried out by the school to students is in the form of additional hours of mathematics learning for these students outside of school time, this intervention is still carried out today by the school to students but for now the success rate of this intervention is 50% this is because when the child is intervened and given direction in working on math problems the child is still confused in doing the problem Mathematics is not infrequently even the problem is not done at all. So researchers provide another intervention in doing math problems, namely using the media of calculating smart boards. The counting smart board media is used to do addition, subtraction, multiplication, division and determining differences problems, this makes students have visuals about subtraction and addition operations with counting smart board media in the form of visual or real. When this intervention was successful, only 50% of the children were still confused and less focused in working on reduction and addition calculation operations and in determining the difference. The following is a picture of the intervention program using the learning media of the counting smart board.

**Figure 1.** *Intervention Program Using Numeracy Smart Board Media*



**Figure 2.:** *The Example of Using Numeracy Smart Board Media*



## Discussion

The results of the study showed that there were students who experienced specific learning difficulties (dyscalculia). Learners often experience difficulties in learning to count from addition and subtraction. As well as experiencing confusion when doing questions.

Rosselli (2006) in Azhari (2017:71) learners with dyscalculia disorder encounter difficulties in understanding intuitive numbers, and have problems learning a number of facts and procedures. And according to the opinion of the Department for Education and Skills (DfES) (Butterworth: 2003) in Jalal (2022:471) that dyscalculia is a condition that affects the ability to acquire arithmetic skills. Students experiencing dyscalculia may have difficulty understanding simple things such as the concept of numbers, do not have an intuitive understanding of numbers, and have problems learning the facts and procedures of numbers. As well as if it produces the correct answer or uses the correct method the learner can do it mechanically and without any confidence.

The above statement is strengthened by the existence of supporting instruments for data on the results of mathematical proficiency trials and assessment instruments showing that students have difficulty learning mathematics and are at risk of getting scores below the average or brought a Minimum Completion Criteria (KKM) score. Helen Keller international (2009) explained that the results of calculating the number showed a number less than equal to 49, so the level of skill achievement was positioned in the group of understanding that was categorized as low and could be categorized as continuous learning.

From the results of the research obtained through the mathematical ability trial test, a dyscalculia test was carried out aimed at determining students' understanding of this instrument. This readability test was carried out on 3 students in III grade of SDN Jatiraga 1 Jatitujuh District, Majalengka Regency. This dyscalculia test sheet has been adapted to the curriculum and cognitive level of the learners. Each question of the scaled test sheet contains 10 questions to track a specific category or form of learning difficulty (dyscalculia).

From the results of readability, it shows that overall 2 (two) students can understand, understand the dyscalculia test sheet that has been given. The student can understand the meaning of the words contained in the diskalkulia test sheet, while 1 (one) student has difficulty understanding the diskalkulia test sheet so that the student needs help to do the questions contained in the dyscalculia test sheet. Data collection was carried out at the SDN Jatiraga 1, Jatitujuh District, Majalengka Regency.

In this study, it was also found that there was a problem that occurred in the field when the teacher explained that mathematics learning in the class of students who had specific learning difficulties (dyscalculia) were too indifferent and could not focus on learning in class so that when the teacher gave a test in the form of a question to the student felt confused and could not understand the problem.

Based on the result of observation and the result of the assessment that students have difficulty in subtraction, addition, division and multiplication. The learner then determined the diagnosis of having difficulty learning mathematics (dyscalculia). Diagnosis is a term adopted from the medical field. According to Thorndike and Hagen (Makmun: 2012), diagnosis can be interpreted as: (1) the effort or process of discovering what weakness or disease a person is experiencing by careful testing and study of symptoms, (2) a careful study of the facts of a thing to find essential characteristics or errors and so on, (3) decisions reached after a careful study of the symptoms or facts.

The work of diagnosis is not merely identifying its types and characteristics, as well as the background of a particular weakness or disease, it also implies an attempt to foresee the possibilities and suggest actions to solve them.

After the diagnosis is established, an intervention is held for the action of solving specific learning difficulties (dyscalculia). The intervention carried out by the school to students is in the form of additional hours of mathematics learning for these students outside of school time, this intervention is still carried out today by the school to students but for now the success rate of this intervention is 50% this is because when students intervene and are given direction in doing mathematical problems, These students are still confused in doing math problems, even not infrequently these problems are not done at all.

## **Conclusions and Recommendations**

### ***Conclusion***

Research that has been carried out at SDN Jatiraga 1 in grade III students, the results of identifying 1 (one) student have difficulty understanding the dyscalculia test sheet so that the student needs help to do the questions contained in the dyscalculia test sheet. Therefore, it is determined that students experience specific learning difficulties (dyscalculia).



### ***Recommendations***

Based on the conclusions of the research results, the recommendations are addressed to:

#### ***1. School***

The school and teachers provide mathematics learning assessment instruments that can be used to determine the abilities, difficulties, and learning needs of students. In addition, the results of the assessment can be used as a temporary reference if there are students who are suspected of having difficulty learning to count (dyscalculia).

#### ***2. Parents of Students***

Parents are expected to provide stimulus to their children at every phase of development, especially when their children enter pre-school age, where children begin to learn to number.

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