Interval: Indonesian Journal of Mathematical Education
Vol. 3, No. 2, December 2025, pp. 146~158
ISSN: 3021-7857, DOI: 10.37251/ijome.v3i2.2512

Understanding Elementary Students' Mathematics Learning Difficulties: A Qualitative Analysis of Internal and External Factors

Ni'mah Mulyaning Tyas[1], Tyas Puji Rahayu[2], Sutrisno[3], Sri Muati[4]
[1] Elementary School Teacher Education, Semarang State University, Central Java, Indonesia
[2]Bandarjo 01 State Elementary School, Central Java, Indonesia
[3]Langensari 01 State Elementary School, Central Java, Indonesia
[4]Candirejo 02 State Elementary School, Central Java, Indonesia

Article Info

Article history:

Received Sep 9, 2025
Revised Oct 13, 2025
Accepted Nov 23, 2025
Online First Dec 24, 2025

Keywords:

Elementary School
Learning Difficulties
Learning Theory
Mathematics

ABSTRACT

Purpose of the study: This study aims to describe the factors causing mathematical difficulties.

Methodology: This qualitative study involved 25 students who indicated they were having difficulty learning mathematics. Data collection techniques included observation, interviews, questionnaires, documentation, and field notes. Data analysis involved data reduction, data presentation, and drawing conclusions.

Main Findings: The types of learning difficulties experienced by students include difficulty understanding the concept of fractional comparison, difficulty calculating whole numbers, and difficulty solving word problems. Factors contributing to students' learning difficulties include internal and external factors. Internal factors include negative attitudes toward learning mathematics, low motivation to learn, suboptimal physical health, and sensory impairment. External factors include a lack of variety in teaching methods, suboptimal use of learning media, school infrastructure, and family environment.

Novelty/Originality of this study: Providing information about the causes of difficulties in learning mathematics that are often experienced by students, so that efforts can be made to reduce difficulties in learning mathematics.

Corresponding Author:
Ni'mah Mulyaning Tyas,
Pendidikan Guru Sekolah Dasar, Universitas Negeri Semarang, Jawa Tengah, Indonesia
Jl. Raya Beringin No.15, Wonosari, Kec. Ngaliyan, Kota Semarang, Jawa Tengah, Indonesia
Email: nmmulyaningtys99@gmail.com

1. INTRODUCTION

Mathematics is a basic subject that plays a crucial role in developing logical, critical, and systematic thinking skills in elementary school students [1], [2]. Learning mathematics helps students understand the concepts of numbers, patterns, and relationships that are useful in everyday life [3], [4]. Early mastery of mathematics forms the foundation for successful learning at subsequent levels of education. Therefore, mathematics learning needs to be designed meaningfully and in accordance with students' developmental characteristics [5], [6]. Teachers play a strategic role in creating effective and enjoyable mathematics learning.

Despite its crucial role, mathematics is often considered a difficult subject by elementary school students [7], [8]. Many students experience difficulties in understanding basic mathematical concepts [9], [10]. These difficulties are often evident in low learning outcomes and a lack of active student participation in learning [11], [12]. Furthermore, students tend to have negative attitudes and fears toward mathematics [13], [14]. This situation indicates a problem that requires serious attention.

Difficulties in learning mathematics can manifest in various forms in elementary school students [15], [16]. Some students experience difficulty understanding the concept of numbers and arithmetic operations [17], [18]. Furthermore, fractions and integers are often a major source of difficulty for students. Difficulties also emerged when students were asked to solve word problems that required problem understanding and logical reasoning. This demonstrates that mathematics learning difficulties are complex and diverse.

Factors contributing to mathematics learning difficulties are inextricably linked to students' internal conditions [19], [20]. Internal factors include students' attitudes toward mathematics, motivation to learn, and physical health [21], [22]. Students with low learning motivation tend to lack focus and give up easily when faced with math problems. Furthermore, suboptimal sensory abilities can hinder the process of absorbing information. These internal factors significantly impact students' success in learning mathematics [23], [24].

In addition to internal factors, mathematics learning difficulties are also influenced by external factors. External factors include teachers' inadequately varied teaching methods and suboptimal use of learning media [25], [26]. Monotonous learning can quickly lead to students becoming bored and disinterested in mathematics [27], [28]. Limited school facilities and infrastructure can also hinder the learning process [29], [30]. An unsupportive family environment also contributes to students' learning difficulties.

Efforts to address mathematics learning difficulties need to be systematic and ongoing [31], [32]. Teachers need to understand the types of difficulties students experience to determine appropriate learning strategies [33], [34]. The use of engaging learning media can help students understand mathematical concepts more concretely [35], [36]. Furthermore, support from the family environment is essential to increase student learning motivation. Collaboration between teachers, students, and parents is key to successful mathematics learning.

Previous research by Sholihah et al., [19] identified elementary school students' mathematics learning difficulties based on self-, environmental, and family-based aspects. However, this study was categorical and did not deeply link the types of mathematics learning difficulties experienced by students to actual classroom learning conditions. Meanwhile, Yulita & Ain [37] research focused on mapping the forms of mathematics learning difficulties in elementary school students, but did not comprehensively explore the factors causing these difficulties from the perspectives of teachers, students, and the learning environment simultaneously. Departing from these limitations, this study fills this gap by presenting a more holistic qualitative analysis by integrating the types of mathematics learning difficulties with internal and external factors of students based on field data obtained from observations, teacher and student interviews, and questionnaires, thereby providing a deeper contextual understanding of the dynamics of mathematics learning difficulties in elementary schools and their implications for learning practices.

The novelty of this research lies in its comprehensive analysis of the types of mathematics learning difficulties experienced by elementary school students, which are examined simultaneously with internal and external causal factors based on in-depth qualitative data. This research not only identifies the types of learning difficulties but also directly links them to classroom learning conditions, student characteristics, and the family environment. Furthermore, this research presents contextual findings that illustrate the reality of mathematics learning difficulties among elementary school students in today's primary education environment. The urgency of this research is increasing considering that mathematics learning difficulties in elementary school can have long-term impacts on students' academic achievement and attitudes toward mathematics in subsequent levels of education. Therefore, the results of this study are expected to provide a basis for teachers and schools in designing more appropriate learning strategies to minimize mathematics learning difficulties from an early age. This study aims to describe the types of mathematics learning difficulties experienced by elementary school students.

2. RESEARCH METHOD

2.1. Research Methods

The approach used in this research is a qualitative descriptive method. Qualitative research focuses on an in-depth understanding of the phenomena experienced by research subjects, such as behavior, perception, motivation, and actions, which are examined comprehensively in a natural context through the presentation of data in narrative form and language [38], [39].

2.2. Research Procedures

This research was conducted in a structured manner through several stages. The first stage was the preparation phase, which began with initial observations and pre-research activities to ensure that the problems being studied actually occurred in the field and were not merely assumptions. Next, the researcher formulated the research problem and conducted a preliminary study through a review of previous research and literature, particularly journals related to mathematics learning difficulties [40], [41]. At this stage, the research title was determined, a qualitative research approach was chosen, and a research design or proposal was developed in

consultation with the supervisor. Furthermore, the researcher developed research instruments and obtained research permits from the relevant parties.

The second stage was the research implementation phase, which included data collection and analysis. Data collection was conducted through observation, interviews, questionnaires, documentation, and field notes, in accordance with established guidelines. The data obtained were then analyzed by data reduction through grouping information to facilitate the analysis process. The grouped data were then presented in narrative form to enable the researcher to understand the conditions in the field more clearly and draw conclusions. To ensure the validity of the data, credibility, transferability, dependability, and confirmability were tested [42], [43]. The final stage is compiling the research report. After completing the entire research process, the researcher compiles a descriptive report of the research findings in accordance with scientific writing standards. This report systematically outlines the entire research process and findings for easy understanding and academic accountability. The research procedure can be seen briefly in the following image:

Figure 1. Research Procedure

2.3. Research Population and Sample

In qualitative research, the term "population" is not used as in quantitative research, as it is based on specific cases occurring within a specific social context [44], [45]. Qualitative research findings are not intended to be generalized to the population at large, but rather to be transferred to other social contexts or situations with similar characteristics [46], [47]. This is due to the non-random nature of the subject selection technique. Therefore, research results can be applied to other social situations if conditions are similar to the context being studied. The subjects of this study were fourth-grade students at public elementary schools in West Ungaran District who were experiencing difficulties in learning mathematics [48], [49].

The selection of research subjects was carried out using a purposive sampling technique. This technique determines research subjects based on specific objectives, rather than randomly or based on regional stratification [50]. The use of purposive sampling was chosen considering the researcher's limited time, energy, and resources. Based on these considerations, the research subjects focused on fourth-grade students who indicated they were experiencing difficulties in learning mathematics [51], [52]. From each elementary school selected as research subjects, five students were selected as research subjects. The selection of subjects was based on students' mathematics learning outcomes and information from teachers obtained through interviews.

2.4. Data Collection Techniques

The data collection technique used in this study was interviews. Interviews were used to obtain in-depth information that could not be obtained through observation [53], [54]. The type of interview used was a semi-structured interview, which falls into the in-depth category and allows for flexibility in implementation. During the interview, the researcher had the opportunity to develop questions beyond the interview guide to obtain more comprehensive information based on the responses provided by the informants [55], [56].

Interviews were conducted with fourth-grade teachers and students identified as having difficulties learning mathematics. Data obtained through the interviews included factors contributing to difficulties in learning mathematics, both internal and external, as well as efforts made to overcome these difficulties [57], [58]. Prior to conducting the interviews, the researcher developed an interview guide to ensure the data collection process remained focused and aligned with the research objectives. The interview guide consisted of 12 questions directed at both teachers and students. To ensure accurate data collection, the researcher used a notebook to record the interview results and a camera to record and document the interview process.

2.5. Instruments

This research uses qualitative methods, so the researcher serves as the instrument. A qualitative approach requires the researcher's presence in the field, as the primary research instrument, as well as the action planner, data collector, data analyst, and research result reporter [59], [60]. The researcher's role in qualitative research is quite complex; he or she simultaneously serves as the planner, implementer, data collector, analyst, interpreter, and ultimately, the research reporter [61], [62]. In addition to the researcher as an instrument, this study also utilized observation sheets, interview guides, and student difficulty questionnaires.

2.6. Data Analysis

Qualitative data analysis is a continuous, iterative, and ongoing endeavor. The activities involved in data analysis include data reduction, data display, and drawing/verification [63], [64]. As shown in the following image:

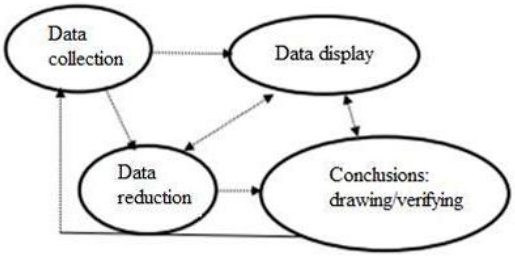

Figure 1. Qualitative analysis of data according to Miles and Huberman

The data analysis in this study adheres to Miles and Huberman's interactive model, which includes data reduction, data presentation, and conclusion drawing [65], [66]. These analysis stages were carried out continuously from the initial data collection to the preparation of the final research report. The first stage is data reduction, which is the process of selecting, focusing, simplifying, and transforming raw data obtained from the field. This process is carried out continuously to determine what is relevant and irrelevant to the research focus. Data obtained through interviews, observations, questionnaires, and documentation were grouped based on the type of mathematics learning difficulty, the factors causing the difficulty, and the efforts made to overcome it. Information not directly related to the mathematics learning difficulty was excluded from further analysis to ensure a more focused conclusion drawing process.

The next stage is data presentation, which aims to facilitate understanding of the conditions in the field. Data presentation in qualitative research can be done in the form of narrative descriptions, tables, or groupings between categories. In this study, the data were presented descriptively and supported by tables to clarify the relationships between findings. Systematic data presentation allows researchers to identify patterns and trends emerging from the research results. The final stage is drawing conclusions, which are based on the overall results of the data analysis. The conclusions are findings that detail the types of mathematics learning difficulties experienced by students, the factors that cause them, and the efforts that can be made to overcome these difficulties [62], [67]. These conclusions are written descriptively to answer the research problem formulation. Thus, the research results are expected to provide a clear and meaningful picture of the phenomenon of mathematics learning difficulties in students.

3. RESULTS AND DISCUSSION

Based on the results of interviews conducted with informants, namely 5 fourth grade teachers and filling out questionnaires supported by interviews with students, the results showed that difficulties in learning mathematics in fourth grade were caused by internal and external factors.

3.1. Internal Factors Causing Difficulties

3.1.1. Attitude in Learning

Attitude is a tendency to act in a certain way. A positive attitude toward a subject is a good start to the learning process [68]. Conversely, a negative attitude toward a subject can potentially cause learning difficulties or result in less than optimal learning outcomes. Based on a questionnaire supported by interviews, researchers found that students' attitudes toward mathematics varied overall; some enjoyed mathematics and others disliked it. One student who disliked mathematics was a S-22 student. For S-22 students, mathematics is a difficult subject, so S-22 students disliked it. This is conveyed in the following interview excerpt.

Researcher: "What do you think about math?"
Student S-22: "I don't like math, it's really hard."

A similar statement was also made by an S-25 student, he did not like mathematics lessons because S-25 students found mathematics lessons difficult.

Researcher: "What do you think about math?"
Student S-25: "It's hard, I don't like math."

Students' negative attitudes toward mathematics learning affect their participation in the learning process. Students with negative attitudes toward mathematics tend to engage poorly in mathematics lessons, not paying attention to teacher explanations, and engaging in other activities during class, such as chatting with friends. This statement was confirmed by a GK-5 teacher in the following interview.

> "Kids are lazy about math. If they're already lazy and feel like they can't do it, that's going to make things difficult. If they're already afraid, because they feel like they can't do it from the start, they'll end up doing it on a motorcycle taxi."

A GK-1 teacher expressed a similar sentiment, stating that some students were noisy and inattentive during math lessons. This inattention was suspected to be due to a dislike of math.

> "Students' attitudes during class are always noisy, some are just being themselves. Some are serious about studying, some are serious about playing, and some are serious about studying while playing."

Students who dislike math aren't always lively. They're not active during lessons and tend to remain silent, indicating a lack of enthusiasm for learning. Students simply stare at the board but don't always pay attention. When the teacher asks questions, they don't respond.

> ".....Those who like it are happy, those who don't like it are just silent, watching. But when we see it, we don't know whether we understand it or not, we will know after taking the test." (interview with GK-5 teacher)

Students' attitudes during math lessons are also influenced by the teacher's attitude. Teachers who teach math in a fun way and pay attention to each student are more likely to be respected by their students. Respectful attitudes toward their teachers encourage students to pay attention and not be disruptive during class, as expressed by the Grade 1 and Grade 4 teachers in the following interview excerpts.

> "Actually, students' attitudes in class depend on the teacher. If the teacher is strict, the students are quiet, but if the teacher is relaxed, the children usually underestimate them. But if I want to be strict all the time, it's not fun, how can the lesson be tense all the time. Actually, the lesson should be like PAIKEM lessons, active, innovative, creative, effective, and independent, but that's also difficult." (interview with teacher GK-01)

> "When I teach, the children are obedient and compliant, but there are teachers who teach in a haphazard manner, so some children play by themselves." (interview with teacher GK-04)

The excerpt from the interview results above shows that attitudes in learning mathematics influence students in following the mathematics learning process.

3.1.2. Learning Motivation

Strong motivation is essential for students to achieve success. Motivation from teachers is crucial to encourage students to study hard. In addition to teacher motivation, student motivation is also influenced by parental support. Students who receive attention and support from their parents will have strong motivation.

> "Children's motivation depends on their parents. Children whose parents pay attention to them will automatically be more motivated because they are encouraged. But if their parents don't care enough, their motivation will automatically be lower." (Interview with Grade 3 teacher).

Student motivation during math lessons tends to be low, as observed when students do not prepare their textbooks. Students do not pay attention, even though the teacher had motivated them to study hard at the beginning of the lesson, as the final exams will soon be held.

Furthermore, student motivation can be determined by their preparation for learning math. Students with strong motivation will enjoy learning math even if there is no homework or test the next day. However, students who are struggling with math have low motivation; they do not review the material or study it beforehand. This lack of motivation was confirmed by several students in the following interview excerpts.

> Researcher: "If there's no test tomorrow, do you still study math?"
> Student S-1: "I don't study" (shakes head).
> Researcher: "Usually, if there's no test, do you study math?"

Student S-2: "No."

Teachers generally motivate students verbally through words and real-life examples of successful students, so that those still struggling can emulate their peers. In addition to verbal motivation, teachers also provide rewards or recognition to encourage students who are struggling to succeed in their studies. However, teacher motivation without parental support will not have a significant impact on students.

> "Actually, yes, enthusiasm and attention, but everything still has to be balanced from the family. At school, attention is abundant but at home there is no attention from parents, it is also raw, for example, the teacher has given motivation and so on, the child is attentive, just attention, but to get into the child's mind is difficult, I think it is a family factor, miss." (Interview with GK-2 teacher).

> "Yes, if I'm motivating, I ask for your cooperation with your parents. Every time we reflect, the teacher motivates, and it's up to the family to support it." (GK-5 interview)

Based on these two statements, families play a crucial role in motivating students. Parents who don't provide maximum attention will impact students' low motivation to learn at school. Low motivation to learn leads to students not paying attention during lessons and tending to be noisy in class.

3.1.3. Physical Health

Health is a crucial factor in successfully learning mathematics. Students who are not feeling well will struggle to learn. Students who are sleepy and unable to concentrate during class can be a sign that they are not in optimal physical condition. This can result in them not being able to properly absorb the material presented during class. Some students who are experiencing learning difficulties report feeling dizzy during class, as described by an S-8 student in the following interview excerpt.

R: "Have you ever felt sick during math class that interfered with your math class?"
S: "Yes, I have. Dizziness."

A student's physical condition can disrupt their concentration. Furthermore, poor health, which often leads to absences, can lead to students falling behind in their studies. This condition also contributes to students' difficulties in mathematics, as explained by a GK-3 teacher.

> "Yes, because you didn't come in, you automatically missed the lesson."

Students with health problems require special attention and appropriate treatment from experts or doctors. This is recognized by GK-4 teachers.

> "Yes, if a child is often absent because they are sick, have a headache, have a fever, and the child seems weak, I usually call their parents."

Based on the interview results, teachers have paid attention to their students' health. Furthermore, coordination between teachers and parents is needed to maintain student health.

3.1.4. Sensing Ability

Visual impairments can interfere with students' ability to absorb information, particularly in mathematics. Data collection revealed that not many students experienced visual impairment. Researchers identified two students with visual impairments. They were nearsighted, or nearsighted.

Students with visual impairments require special care, a concern for the Grade 4 teacher. Knowing that her student had a visual impairment, specifically nearsightedness, she placed him in the front seat in the middle so he could still see the blackboard clearly, as described in the following interview excerpt.

> "Yes, my minus eyes sit in the front middle so I can focus on when to write"

Hearing impairments can also affect students' ability to absorb information delivered by teachers. Some students find it difficult to listen to teacher explanations when sitting in the back. Researchers found this through a questionnaire, which included the statement, "I can't hear the teacher's explanations well when explaining math." However, they couldn't find a more in-depth explanation because interviews revealed students were unable to provide detailed information about their hearing impairments.

3.2. External Factors Causing Difficulties

3.2.1. Teacher Teaching Variations

The use of varied learning methods and models is necessary to capture students' attention and reduce boredom during mathematics lessons. Based on observations and interviews, researchers found that teachers don't just use conventional learning methods. The choice of methods is tailored to the material being presented.

GK-5 teachers use a variety of learning models. At the beginning of the lesson, GK-5 teachers use a lecture model to open the lesson, then combine it with cooperative learning models to keep students engaged and avoid boredom.

> "First, a lecture, yes, opening the lecture with apperception, then using the learning model." (GK-5 teacher interview)

A GK-2 teacher also employs a similar approach, not only using a lecture method but also using models tailored to the subject matter. For example, in rotational and fold symmetry, she teaches through demonstrations. Students are encouraged to practice directly using cut-up paper. With a learning model that encourages active participation, students will more easily grasp the material, as they don't simply listen to the teacher's explanation.

Appropriate learning methods and models will facilitate student comprehension and reduce student boredom. However, at Candirejo 02 Public Elementary School, researchers have not found any learning models that encourage active participation in mathematics lessons. During math lessons, observations revealed that the teacher predominantly used the lecture method. The teacher explained fractions in front of the class, and students were unenthusiastic; instead, they chatted with their deskmates. After explaining the material, the teacher gave students the opportunity to ask questions, but none of them asked. Students were then asked to complete the exercises in the textbook within a specified time and then submit them.

Observations revealed that the teacher did not supervise or guide students individually while they completed the exercises. Due to the lack of individual supervision, some students fail to complete practice exercises and submit their answers. These students are among those who are experiencing difficulties learning mathematics.

Using appropriate and varied methods, along with encouraging active student participation, will make learning meaningful. Meaningful learning will make the material interesting and well-understood by students. Conversely, conventional learning is less engaging and results in a lack of understanding of the material.

This is confirmed by the following interview excerpt with a doctoral student.

> R: "Did you understand the material the teacher explained yesterday?"
> S: "I don't understand." (shakes head)
> R: "So if you don't understand, do you ask?"
> S: "I don't ask."

The explanation above shows that teachers have attempted to use a variety of methods. However, some teachers still predominantly use the lecture method, resulting in students' lack of interest in learning mathematics.

3.2.2. Use of Learning Media

Elementary school students cannot yet think abstractly, so the use of learning media is a crucial factor in mathematics learning to ensure students understand mathematical concepts effectively. Teachers recognize the importance of using media to aid student understanding, and therefore strive to utilize media in mathematics instruction. This is conveyed in the following excerpts from interviews with Grade 2 and Grade 4 teachers.

> "...Children aren't allowed to be verbal, so sometimes they make their own teaching aids." (GK-2 interview)

> "Yes, that's for sure. It doesn't have to be beautiful, but the media I use is simple. For example, in math, the media, like multiplication, can be done using more than five fingers..." (GK-4 interview)

Teachers recognize the importance of using media in mathematics learning, but sometimes they encounter difficulties in selecting appropriate media for the material being presented. For example, in the presentation of integers, teachers lack a clear understanding of the appropriate media for teaching the material. They often present the material by providing analogies to students, such as negative integers being like debt and positive integers being like paying debt. This is confirmed by the following GK-1 teacher's statement in the interview excerpt.

> “Harusnya memang digunakan media karena mengajarkan matematika kan ada cara kongkret, semi kongkret, semi abstrak, dan abstrak seperti itu kan. Tapi tidak semua materi bisa memakai media, seperti

pada materi bilang bulat itu kan ada yang negatif dan positif, anak itu bingung kalau sudah masuk ke operasi bilangan bulat. Negatif dikurangi negatif lagi kok hasilnya jadi tambah banyak, yang seperti itu anak masih bingung."

Based on this, it can be seen that teachers' lack of understanding of media makes it difficult for students to fully grasp the material. Another obstacle identified by researchers is teachers' reluctance to develop their creativity by creating innovative media tailored to the material and engaging students' interest and attention in mathematics lessons. The availability of mathematics KIT teaching aids is considered sufficient for teaching mathematics, as expressed by a GK-5 teacher.

"If I'm not lazy, I'll make it myself. If not, I'll use the kit, which we provide. If not, the children will make it themselves."

Teachers also choose to utilize the school environment as a medium rather than creating learning media that can attract students' attention and interest, as conveyed in the following interview excerpts with GK-1 and GK-3.

"Sometimes I use objects around the school as media, like for addition or subtraction, I can use pebbles from the school." (Interview with GK-1)

"The media I use are those found in the surrounding environment. Tools found in the surrounding environment are used as learning media." (Interview with GK-3)

Using appropriate media for the material can help students understand concepts better. Students who actively participate in creating learning media have been shown to improve their understanding. In geometry and measurement, students are asked to create geometric shapes such as cubes and cuboids. This stimulates active thinking, resulting in fewer students struggling with the material. In contrast, in the case of integers and fractions, the lack of concrete media makes it difficult for students to grasp the material.

Teachers generally understand the importance of media in learning and strive to use them when delivering material. However, obstacles such as a lack of understanding of appropriate media and a lack of creativity in creating media result in students being less engaged in mathematics learning.

3.2.3. Facilities and Infrastructure at School

Based on observations at each school, the facilities and infrastructure in each school support the mathematics learning process. Classroom conditions are considered good, and the buildings are permanent structures that are safe for learning. Each classroom has windows and ventilation to allow air to flow in and out, ensuring the classrooms are not stuffy. Furthermore, the classrooms are equipped with fans to support student comfort during mathematics learning.

The location of the school generally does not interfere with student learning. Interviews with teachers and students at Langensari State Elementary School revealed that the school's location on a main road, with frequent traffic, does not disrupt the learning process and remains conducive. Bandarjo State Elementary School, similarly located near a market, is not affected by the school's location. Mathematics learning continues to run smoothly.

However, observations at Candirejo 02 State Elementary School revealed that the whiteboard in the fourth grade classroom was dirty. The whiteboard used was blackened due to the use of indelible markers. The dirty whiteboard significantly impaired students' vision, especially those sitting at the back, as writing became unclear. The dirty whiteboard also caused students to pay less attention when the teacher explained the material. In general, school facilities are sufficient to support the mathematics learning process as stated by GK-3.

"The school's condition does have shortcomings, but it is sufficient to support learning."

In addition to the good condition of the building, the school also provides math textbooks, such as electronic textbooks, stored in classroom cabinets and used in every math lesson. Researchers also observed math teaching aids, such as various geometric shapes and a clock, stored in the cabinets. However, during the observations, the researchers did not find any classrooms using LCDs, which could help teachers deliver material in a more engaging manner.

3.2.4. Family Environment

The family environment is an important factor in supporting students' learning processes. Family economic conditions are one of the reasons parents pay less attention to students. At SDN Candirejo 02, most parents work in factories and only come home at night, so they rarely accompany students studying at home. An

example of a lack of parental attention to student learning at school is unfinished homework. Homework given by teachers aims to encourage students to study again at home and can ask their parents if students experience difficulties. However, teachers encounter students who have difficulty learning mathematics who do not do the homework that has been given, this can be an indication of a lack of parental attention, as stated by teacher GK-1 as follows.

> "From what I've observed, families aren't very responsive. This means that if children are given homework to do at home, at most 50% of the time they do it. Parents should be more responsive by checking on their children and accompanying them with their homework."

A similar situation was also encountered at Bandarjo 01 Public Elementary School. Due to the school's proximity to a market, most of the students' parents are traders. After school, students don't go straight home but accompany their parents to the market. This situation leads to parents paying less attention to their students' learning process at school. A GK-2 teacher reported that students who are not cared for by their parents often don't do their homework..

> "...so schools and homes must have trust. Let's manage this well together with our children. For example, if a child is given homework but doesn't pay attention at home, they won't do it. So, the relationship between school, the community, and the home must be inseparable."

In addition to economic conditions, the home atmosphere also influences the student's learning process. At Genuk 01 Public Elementary School, there is a student who has difficulty learning mathematics because the home atmosphere is less supportive, the student is student S-23. Student S-23 has two younger siblings who are not far apart from him, the first younger sibling of student S-23 is in grade II at the same school, while the second younger sibling of student S-23 is still a toddler. The home atmosphere with many young siblings makes the parents' attention more focused on their younger siblings, sometimes Student S-23 also helps look after his two younger siblings so that learning activities at home are less than optimal. This was discovered by researchers based on the statements of the GK-5 teacher.

> ".....like Reva, she has many siblings and they are still small, so her parents might pay more attention to her younger siblings."

From the above discussion, the family environment plays a crucial role for students. An unsupportive family environment prevents students from learning optimally at home. Parents who pay attention to their students and encourage them to consistently study can guide them if they experience difficulties learning mathematics and encourage them to achieve optimal academic performance.

The findings of this study indicate that mathematics learning difficulties in elementary school students cannot be understood as a single problem, but rather as the result of an interaction between internal and external factors. This is in line with learning theory, which states that learning success is influenced by individual readiness and a supportive learning environment. The difficulties experienced by students are not only related to cognitive abilities but also affective and physical aspects that influence student engagement in mathematics learning. Therefore, a holistic and non-semi-spatial approach to addressing mathematics learning difficulties requires a holistic approach.

From an internal perspective, attitudes and learning motivation play a very dominant role in determining student engagement during the mathematics learning process. Negative attitudes toward mathematics have the potential to lead to learning anxiety and resistance to learning activities, which ultimately hinder conceptual understanding. Low learning motivation also indicates that students do not view mathematics as a necessary or meaningful learning experience. This condition strengthens the theory of learning motivation which emphasizes the importance of intrinsic and extrinsic motivation so that students are able to persist in facing learning difficulties.

In addition to affective aspects, health and sensory abilities also contribute to difficulties in learning mathematics. Learning mathematics requires high levels of concentration, precision, and the ability to optimally absorb visual and auditory information. When students' physical conditions are not conducive, information processing is disrupted, resulting in less than optimal conceptual understanding. This suggests that attention to student health is a crucial part of efforts to improve the quality of mathematics learning in elementary schools.

External factors, particularly variations in teacher teaching methods, play a significant role in creating an engaging and meaningful learning environment. Learning dominated by conventional methods tends to make students passive and less engaged. Conversely, learning that directly engages students through activities, discussions, or demonstrations can help students develop a more concrete understanding of concepts. This finding aligns with the constructivist learning approach, which emphasizes students' active role in constructing knowledge.

The use of learning media is also crucial in helping students understand abstract mathematical concepts. Inappropriate media selection or limited creativity in developing learning media can hinder student understanding. Concrete media that aligns with the characteristics of the material have been shown to increase student engagement and facilitate conceptual understanding. Therefore, teachers need a strong pedagogical understanding when selecting and developing mathematics learning media. While school facilities and infrastructure generally support the learning process, specific facility details directly impact learning quality. A suboptimal learning environment, even if seemingly trivial, can diminish students' focus and attention during learning. This demonstrates that the quality of mathematics learning is determined not only by teaching methods but also by the comfort and adequacy of classroom facilities.

The family environment is a significant external factor that significantly impacts the sustainability of students' learning outside of school. Lack of attention and support at home can exacerbate learning difficulties experienced by students at school. These findings underscore the importance of collaboration between schools and families in supporting students' learning. Consistent parental support will help students overcome math learning difficulties and develop positive study habits from an early age.

The findings of this study align with various previous studies confirming that mathematics learning difficulties in elementary school students are influenced by the interaction of internal and external factors. The research of Sholihah et al. [19] showed that aspects of the student's self-esteem, learning environment, and family support significantly contribute to the emergence of mathematics learning difficulties, while Yulita & Ain [37] emphasized that poor understanding of basic concepts and weak student engagement in learning are the main triggers of mathematics learning difficulties in elementary school. This alignment of findings strengthens the argument that mathematics learning difficulties cannot be understood in isolation but must be viewed as a multidimensional phenomenon closely related to students' affective, pedagogical, and learning environment conditions. Therefore, this study provides empirical reinforcement of the theoretical framework and previous findings through qualitative data obtained directly from classroom contexts and real-life interactions between teachers and students.

The impact of this research lies in its contribution to providing a comprehensive contextual picture of the dynamics of mathematics learning difficulties in elementary schools, which can serve as a basis for teachers and schools in designing more adaptive and responsive learning strategies to student needs. The findings of this study also encourage increased teacher awareness of the importance of varying learning methods, selecting appropriate media, and paying attention to students' affective and physical health. Furthermore, this study emphasizes the importance of collaboration between schools and families in supporting students' ongoing success in mathematics learning.

Despite making a meaningful contribution, this study has several limitations. It was conducted within a limited context in a few elementary schools using a qualitative approach, so the findings are not intended to be broadly generalized. Furthermore, time constraints and the number of participants prevented this study from delving deeply into variations in student characteristics based on a wider range of socioeconomic backgrounds. Therefore, future research is recommended to combine qualitative and quantitative approaches with a broader range of subjects to gain a more comprehensive and generalizable understanding of mathematics learning difficulties in elementary schools.

4. CONCLUSION

Based on the research results and discussion, factors contributing to mathematics learning difficulties originate from both internal and external factors. Internal factors originating from students include student attitudes toward learning mathematics, low student motivation, suboptimal physical health, and impaired sensory abilities. External factors originating from outside the students include a lack of variety in teaching methods, suboptimal use of learning media, school infrastructure, and the family environment. It is recommended that future research use a mixed-methods approach involving a wider range of subjects and characteristics to obtain a more comprehensive and generalizable picture of mathematics learning difficulties in elementary schools. Furthermore, future research should examine the effectiveness of learning interventions specifically designed based on internal and external student factors to reduce mathematics learning difficulties sustainably.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the principals, teachers, and fourth-grade students of the elementary schools involved in this study for their cooperation and participation. Appreciation is also extended to all parties who provided support, assistance, and valuable input during the research process. Their contributions greatly supported the completion of this research.

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