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Difficulties in Learning Mathematics Among Primary School Pupils

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Abstract

Mathematics teachers play a crucial role in identifying and addressing the challenges encountered by students, particularly during the primary stage. These challenges may vary in complexity and persistence but are indispensable for students to grasp mathematical concepts, arithmetic, and numerical reasoning, and proficiently execute mathematical operations. The pivotal role of mathematics teachers in diagnosing these challenges cannot be overstated, as it significantly contributes to students' success in mathematics. Regrettably, there is often minimal official attention given to this issue, resulting in students dropping out of education and impeding societal progress. This research endeavors to shed light on the spectrum of difficulties faced by primary school students, their underlying causes, and the indispensable role of mathematics teachers in diagnosing and addressing these challenges. The findings of this study unequivocally demonstrate that while certain challenges manifest in the first grade and dissipate in subsequent grades, others persist and escalate in complexity compared to previous years.

Keywords: Difficulties; Learning; Mathematics; Mathematics Teacher; Primary School

1. Introduction:

The attention directed towards education has become imperative, given its significance in shaping one's social status and daily livelihood, particularly amid the significant advancements in science and technology witnessed in the early years of the third century. The progress and technological advancements across various facets of life have spurred countries to prioritize research and education. Addressing challenges in education, such as identifying barriers, determining their underlying causes, and devising solutions, is paramount for enhancing the effectiveness of the teaching and learning process. Moreover, this proactive approach facilitates the achievement of predetermined objectives, thereby fostering the growth and development of nations.

It comes as no surprise that interest in education across all levels has surged, given the pivotal role of basic education in molding a child's personality and nurturing their intellectual, social, and mental capacities. Furthermore, it fosters confidence in children and prepares them for advancement to higher educational tiers. Among the foundational subjects, mathematics stands out as paramount for elementary school students, as it is universally mandated across all educational levels, regardless of skill level.

Despite its significance, mathematics remains a formidable challenge for many students due to the myriad obstacles encountered during the learning process at every educational stage.

Search objectives:

This study aims to comprehensively understand the difficulties faced by primary school students in mathematics, discern their underlying causes, evaluate the role of mathematics teachers in identifying and addressing these issues, and ultimately provide recommendations to the education sector to surmount these challenges and achieve its educational objectives, thereby enhancing the overall learning experience.

This determination is structured around three primary axes:

1. **Nature of Learning Challenges in Mathematics**: This axis delves into the specific learning challenges encountered by students in mathematics.
2. **Nature of Primary School Pupils**: The focus of this axis is on understanding the characteristics and traits of primary school students, which influence their learning experiences and outcomes.
3. **Prior Research**: This axis encompasses a review of existing literature and research findings related to the difficulties faced by primary school students in mathematics, providing valuable insights and informing the current study.

The importance of the search is underscored by several key factors:

1. **Critical Stage of Development:** The primary stage represents a foundational phase in a student's educational journey,

where fundamental mathematical concepts and skills are established. Addressing challenges at this stage is crucial for laying a solid groundwork for future academic success.

2. **Informing Curriculum Development:** By identifying and understanding the difficulties students encounter in learning mathematics during the primary stage, the search provides valuable insights for those involved in designing mathematics curricula. This information empowers curriculum specialists, educators, and teachers to tailor instructional approaches and resources to better meet the needs of students, ultimately enhancing the quality and effectiveness of education.

3. **Enhancing Educational Efficiency and Development:** By reducing the barriers to learning mathematics in the primary stage, the search contributes to improving the overall efficiency and development of the education system. Overcoming these difficulties not only enhances students' learning experiences but also fosters their academic progress and achievement, thus positively impacting educational outcomes and societal advancement.

In summary, the search serves as a critical tool for improving mathematics education at the primary stage, benefiting students, educators, curriculum developers, and the broader educational community alike.

Search limits:

The search results were related to the following limits:

- The search was limited to learning difficulties in mathematics.
- The search was limited to the primary stage (1-6).

2. The Theoretical Framework

The first axis: The nature of difficulties in learning mathematics.

The purpose of this axis' presentation is to draw attention to the most common and important math learning obstacles faced by elementary school students' challenges related to the nature of learning difficulties in general. Three primary points of representation for the nature of mathematics learning difficulties are the concept of learning challenges, their classification, and their diagnosis.

First: The concept of difficulties in learning mathematics.

The following information will be provided to identify some of the most significant and prevalent arithmetic learning challenges among elementary school pupils, those challenges that are associated with the notion of learning difficulties:

The premise made by the French philosopher Descartes (1596–1650) that the pineal gland is the

core of the mind and that the human brain is the foundation for cognitive, emotional, or motor action is the historical source of problems with learning mathematics. Following the widespread recognition of this notion, the first attempts to investigate the relationship were made. between mental activity and mathematical aptitude through theories based on Franz Joseph Gall's notion of physiognomy, which postulated that various faculties/abilities are mentioned in various domains. Henschen, who was the first to use the term "dyscalculia" to describe a mathematical aptitude issue linked to brain atrophy, then published statistical analyses. He thought that brain injury was the cause of this illness. Dyscalculia is defined as a student's inability to deal with numbers and mathematical equations. A student with dyscalculia may not be able to distinguish between (21,12) and (31,13) or add numbers correctly. They may also be unable to distinguish between the multiplication sign (×) and the addition sign (+). At the end of the century, Studies focusing on the genetic and cognitive components of learning mathematical concepts as well as other diseases started to emerge in the 20th century (Tayseer Kawafheh, 2003: 95; Khaled Al-Sayyid Muhammad, 2007:190-191).

Some definitions concentrate on learning difficulties in mathematics despite the abundance of general definitions that highlight learning difficulties in general. Magdy Aziz defined difficulty as anything that prevents a student from completing a step of the problem correctly and as the incapacity to learn mathematical concepts, procedures, and skills. (Ibrahim Magdy Aziz, 2008, 141–142). Ismail Al-Sadiq said that a student with average intelligence cannot excel in mathematics, which makes learning the subject difficult (Ismail Muhammad Al-Sadiq, 2001,145). For children in elementary, middle, and secondary education, learning issues related to mathematics, or difficulties with executing mathematical operations, are the most prevalent and pervasive category of learning difficulties. It is a term used to describe difficulty or difficulties with:

- Applying and comprehending mathematical facts and concepts.
- Understanding computation and using mathematics and numbers to reasoning.
- Carrying out mathematical procedures and computations.

The majority of research studies that have examined mathematics difficulties agree that the term "learning difficulties in mathematics" refers to a subset of students who perform less well academically than their peers. Examples of these studies include those by Ahmed Ahmed Awad (1992), Faryal Abd Abu Sitta (1994), Ahmed Ahmed Hawad and Musad Rabie Abdullah (1995), Ismail Al-Sadiq (1997), and Salah Al-Din Al-Sharif (2000), Hassan Baltia and Alaa Metwally (2000), Hassan El-Gendy (2004), Ahmed Hassan (2004), Howaida Hassan Abdel Hamid (2005), Howaida Hassan Abdel Hamid (2007), and Nariman Hamid Mahmoud (2008),

Despite possessing average or above average intelligence, they exhibit difficulties in performing mathematical tasks when compared to their peers of the same age, mental state, and academic level; students with sensory disabilities motor, visual, or sensory as well as those who are mentally delayed are not included in this. According to Judy Gray, a student who struggles with mathematics struggles with the process of comprehending ideas in mathematics.

1. The incapacity to use and apply mathematical ideas.
2. The challenge of learning mathematical ideas.
3. Difficulty executing procedural knowledge.

Regarding (Hassan Al-Jundi, 2004, 31), he said that if a student has one or more of the following issues, he will struggle to understand mathematics:

1. Having trouble grasping place value. doing the four arithmetic operations is difficult.
2. Having trouble deciphering what mathematical symbols mean.

Numbers, counting, value spatial, the four arithmetic operations (addition, subtraction, multiplication, and division), and mathematical puzzles are the diagnostic tests used to examine this. According to the updated Diagnostic and Statistical Manual of Mental Disorders IV, learning challenges in mathematics are taken into consideration.

According to individually administered standardized tests, his arithmetic skills are much below what would be predicted given his age, assessed IQ, and suitable education.

a. The disorder in (a) seriously impairs his ability to perform daily tasks involving arithmetic computation as well as his academic performance.
b. Difficulties with math in the event of a sensory deficit that is beyond typical limits. There is agreement between these definitions in a few key areas, as demonstrated by the previous presentation of the definitions of learning challenges in mathematics. These elements are:

1. Removing students who struggle because of mental retardation, sensory impairments, emotional disorders, or environmental or sensory deprivation from the group of individuals who have learning challenges.
2. Considering his degree of intelligence, there is a glaring disparity between the tough student's actual performance and his projected performance.
3. Drawing attention to the fact that individuals with learning disabilities often do worse academically when there are disruptions in fundamental psychological processes, learning processes, or flaws in the central nervous system.
4. Intelligence in people with learning disabilities can range from normal to above average, and some are very genius.
5. Since individuals with learning challenges have issues with their academic performance, education, and growth, the concept of learning difficulties is intimately related to the learning process.

Taking into account the definitions of mathematics learning difficulties provided above, the researcher defines learning difficulties as follows: students with average or above average intelligence who exhibit a significant difference between their expected performance on intelligence tests and their actual performance on achievement tests, as well as difficulties with certain learning processes; individuals with mental or sensory disabilities or individuals experiencing emotional disturbances are not included.

Second: Classification of difficulties in learning mathematics:

To identify some of the challenges that primary school kids have in mathematics, as well as those that are related to the classification of learning difficulties generally, the following information is presented regarding the classification of learning difficulties:

According to Judy Gray (1998,1) and Magdy Aziz Ibrahim (2007), 140, there are three categories of challenges in learning mathematics:

1. Challenges in comprehending place value.
2. Difficulties executing mathematical operations as a result of addition, subtraction, multiplication, and division concepts not being fully developed by the efficient application of methods for carrying out these procedures.
3. Having trouble using mathematical techniques to solve verbal puzzles.

Additionally, (Magdy Aziz Ibrahim, 2007, 142–143) identified six categories of learning challenges:

•Verbal learning difficulties Mathematics

When given mathematical facts or problems verbally, the student finds it difficult to understand them and finds it challenging to formulate them mathematically.

• Protogenetic difficulties

The learner discovers that he is unable to process sensory information symbolically.

• Lexical difficulties

It speaks about difficulties in understanding mathematical symbols, such as numbers and signs.

• Graphical difficulties in learning writing

She draws attention to how challenging it is to write mathematical symbols.

• Diagnostically learning difficulties

It describes issues with a student's comprehension of mathematical concepts, relationships, procedures, and Mental computations.

• Operational difficulties in learning or performing the process

It happens when a pupil struggles to complete the four arithmetic operations and substitutes adding or dividing for the appropriate operation.

Susan (1997) noted that students who struggle with mathematics often pay less attention to the following specific problems that they find difficult to learn:

1. Having trouble following the stages involved in addressing difficulties.
2. Having trouble differentiating between different types of numbers.
3. Difficulty adding numbers vertically and horizontally.
4. Having trouble understanding mathematical terms and language.
5. Having trouble comprehending number sequences.
6. Having trouble writing mathematical symbols and numbers

Regarding (Badian, 1999, 45–70) challenges associated with studying mathematics, There are two categories for dyscalculia:

1. Developmental dyscalculia: This condition results from a deficit or abnormality A few cognitive functions include data processing, perception, memory, attention, and visual-spatial perception.
2. Acquired dyscalculia: Having trouble learning math It develops as a result of harm to one hemisphere.

Third: Diagnosing difficulties in learning mathematics

Difficulties in learning mathematics are diagnosed considering two types of diagnosis:

First: The official diagnosis, which includes the following:

These steps outline a comprehensive approach to understanding and supporting a student with a learning disability in mathematics:

1. **Calculating Intelligence Quotient (IQ):** Conducting an assessment to determine the student's IQ, taking into account the impact of their learning disability on cognitive abilities.
2. **Assessing Mathematical Proficiency:** Evaluating the student's mathematical skills and understanding to identify areas of strength and weakness.
3. **Assessing Test and Math Anxiety:** Assessing the student's level of anxiety related to tests and specifically to mathematics, as anxiety can significantly impact performance and learning outcomes.
4. **Determining Cognitive Mental Age:** Using standardized assessments to determine the student's cognitive development level, considering their chronological age and any developmental delays associated with their learning disability.

5. **Neurological Examination:** Conducting a neurological examination to identify any neurological factors or conditions that may impact the student's learning and cognitive functioning.
6. **Assessing Socioeconomic Status and Home Environment:** Involving a social worker to assess the student's family socioeconomic status and home environment, as these factors can influence academic performance and well-being.
7. **Using Questionnaires for Identification:** Implementing questionnaires or screening tools to help teachers identify students who may be struggling with mathematics, allowing for early intervention and support.

By incorporating these steps into the assessment process, educators and support professionals can gain a comprehensive understanding of the student's needs and tailor interventions to support their learning and overall well-being effectively.

Second: Informal diagnosis:

It is carried out by the math instructor, who researches, examines, and assesses both the classroom environment and his teaching strategy. If he discovers that they are normal, he believes that the student is the cause of the problem. In this situation, he follows these procedures:

The following methods are used to assess a student's mathematical achievement level:

1. Determining the student's level of achievement in mathematics is done through the following:

*Achievement evaluations.

*The math instructor employs a variety of graded math assignments to assess and enhance students' mathematical skills and understanding. These assignments include:

-Counting: Students are tasked with counting up to a specific number, such as 25 or 10, to reinforce counting skills and number recognition.

-Identifying Written Numbers: Students are asked to point to written numbers mentioned by the instructor, strengthening their ability to recognize and associate numerical symbols with their corresponding quantities.

-Number Identification: Students are required to verbally identify written numbers by name, reinforcing their understanding of numerical representations.

-Basic Operations: Students work through addition, subtraction, multiplication, and division problems involving integers to practice and consolidate fundamental arithmetic skills.

-Problem-Solving with Real-World Contexts: Students tackle problems involving length, money, and time to apply mathematical concepts

in practical, real-world situations and develop problem-solving abilities.

-Linguistic Challenges: Students are presented with math problems in linguistic form, requiring them to interpret and comprehend mathematical concepts expressed in written or verbal form, enhancing their mathematical reasoning and language skills.

By incorporating these diverse types of math assignments, the math instructor provides students with opportunities to engage with mathematical concepts in various formats, reinforcing their understanding and proficiency across different areas of mathematics.

2. Determining the difference between the student's latent ability and level of mathematical achievement: this is done by first placing the student in a specific grade based on intelligence and mathematical ability tests, then administering an achievement test in mathematics, and finally estimating the degree of difference between the student's results in the two tests.

3. Recognizing mistakes in computation and mathematical reasoning: To do this, respond to the following inquiries:

- Does the student record the solution and arrive at the right answer in the right order?
- Did the learner use uncontrolled steps to arrive at the correct answer?
- Is the pupil unable to fully address the problem?
- What led to the malfunction? Is this a challenging problem? or failing to remember? That deficiency in the drive?
- Does the pupil erroneously solve the problem at random?
- Does the student make errors when attempting to apply concepts and principles of mathematics?
- Does the learner make errors when attempting to solve the problem?
- Does the learner jumble up mathematical information and make blunders as a result?
- Does the student's carelessness in writing numbers and transcribing the numerical sequence lead to errors in recording the correct answer?

Finding the mental components of learning challenges in mathematics: The identification and diagnosis of learning difficulties in mathematics in students, along with many of the tests they include, can provide teachers with information about the factors unique to developmental psychological learning difficulties that cause learning difficulties, including mathematics. These factors relate to difficulties of affiliation, cognition, concept formation, recollection, and a solution to a problem.

Given that the diagnosis and teaching processes are complementary, it is evident from the foregoing that the diagnosis process largely

serves the goal of therapeutic pedagogical intervention.

The second axis: The nature of primary school pupils:

The goal of this title is to pinpoint the traits of math-challenged kids to pinpoint their areas of strength and weakness. Here are the specifics:

Based on earlier studies and research that addressed learning challenges generally, several general features set apart individuals with mathematics learning difficulties. learning challenges in maths.

According to Johnson (1995: 13–17), students who struggle with mathematics learning often exhibit the following traits:

1. Relationship in space
2. The sense of vision.
3. Identifying symbols
4. Capabilities in language and communication
5. Graphomotor abilities
6. Mental techniques
7. Recollection.

The following are the features of math learning challenges as defined by (McInnis & Heather, 1995, 544–353):

1. The Challenge of Generalization
2. Difficulty Tracking Results
3. The Challenge of Generalization
4. Difficulties with Recall
5. The Challenge of Obtaining Elementary Units.

Students who struggle with mathematics have a delayed comprehension of new mathematical concepts and abilities, (John, 1997, 151). It is also evident that they struggle with grasping measurement, decimal fractions, percentages, and simple mathematical operations. They also struggle to comprehend the vocabulary used in mathematics. Usually, this is on top of their incapacity to accurately complete mathematical applications. According to (Paula, 2000, 5), pupils who struggle to understand mathematics have several traits, such as:

Challenges with computational comprehension

1. Difficulties in grasping numerical ideas, particularly those that have verbal components.
2. Having trouble figuring out the sports problem.
3. Visual and spatial interference.
4. Having trouble remembering.
5. Anxiety related to math.

According to both Magdy Aziz Ibrahim (2007) and Ahmed Awad (1992), pupils who struggle with mathematics in elementary school exhibit a variety of traits, including:

1- An inability to recognize, pronounce, and write the meanings of numbers.

2. The incapacity to execute mathematical procedures.

3. The incapacity to tell apart comparable numbers.

4- The incapacity to decipher mathematical symbols like (+, -, ÷, and ×).

5. Not being able to locate the double, half, third, or...

6-The incapacity to resolve conversational issues.

According to the study (Miller and Merker, 1997, 47–56), linguistic deficits are frequently present in addition to non-verbal deficits in people who struggle to learn mathematics. In addition, given the definitions, mathematical language can be a cause of worry and uncertainty for those who struggle to understand mathematics, particularly those who struggle with reading. Concerning the attributes of pupils who struggle to learn mathematics, the investigator surmises that these pupils are those who exhibit a notable disparity between their true and anticipated mathematical performance, considering their overall cognitive capacities.

This excludes pupils who:

* Experience severe behavioral or emotional episodes.

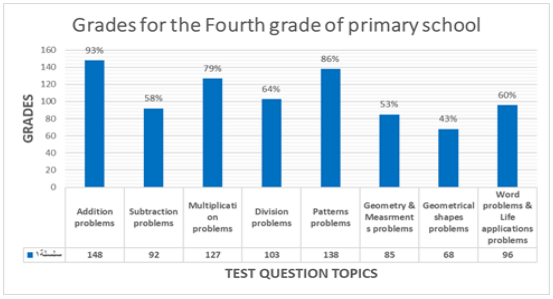
* Have mental impairment and sensory or environmental deprivation.

* Has a malfunction in the central

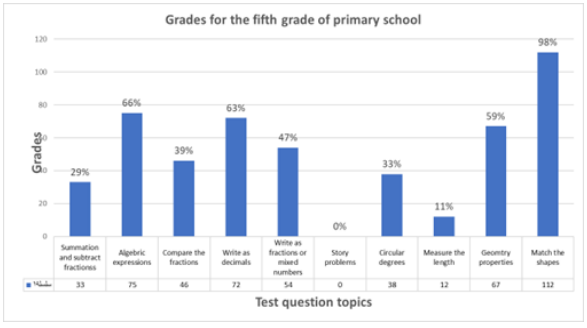
3. Methods of Research and the tools used:

Study Methodology: We used the descriptive approach in this study because it explains the phenomena as they occur and allows us to extract the study sample from that actuality. **Examine sample:** Male and female primary school pupils from the Abdulaziz Al Saud Official Language School in the fourth, fifth, and sixth grades made up the study sample. Utilizing the research instrument:

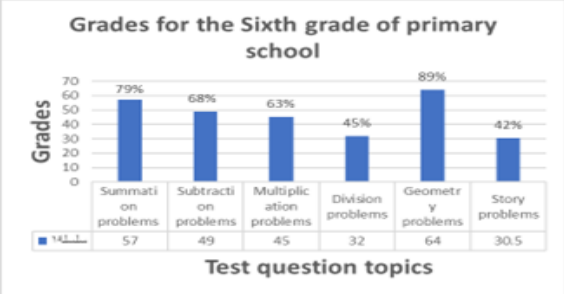
4. Results of Research: Putting the study's findings on display: graphs illustrating how well students answered exam questions. After giving the exam papers to every student in the sample, the researchers read the questions aloud and gave them enough time to respond, all the while trying to ensure a natural response and avoiding student friction (cheating). The exam was scheduled to last one hour in total. Following the test, the papers were collected, any necessary corrections were performed, and the results were tracked.



Figure(1)



Figure(2)



Figure(3)

Fourth-grade primary test results:

Figure (1) illustrates the distribution of correct answers among students across eight questions, with percentages ranging from 43% to 93%. The results indicate varying levels of proficiency in different types of mathematical problems.

The students demonstrated excellence in addition problems, achieving a high percentage of correct answers. They performed very well in problems that relied on number patterns, followed closely by a good performance in multiplication problems. However, their performance in division problems, word problems, and application was deemed acceptable, indicating room for improvement in these areas.

Notably, students struggled with subtraction problems, geometry, measurement, and geometric shapes, as evidenced by their lower success rates in these categories. This suggests significant challenges for students in mastering concepts related to subtraction and geometric concepts, highlighting areas that may require targeted intervention and additional support.

Overall, the analysis of Figure (1) underscores the importance of identifying and addressing specific areas of difficulty in mathematics to support students' learning and achievement effectively.

Fifth-grade primary test results:

As depicted in Figure (2), the percentage of correct responses for nine out of ten questions ranges from none to 66%. However, the accuracy significantly improves for the tenth question, reaching almost 98%. Students performed acceptably in tasks involving algebraic expressions and converting normal fractions to decimal fractions. However, they struggled with writing numbers in mixed or fractional form, comparing fractions, and performing operations such as addition and subtraction with fractions. Additionally, they received low grades in rating radiating angles. Of particular concern is the student's inability to solve any of the word problems presented. This highlights a serious deficiency in their problem-solving skills and comprehension of mathematical concepts in real-world contexts. The findings reveal a significant lack of understanding of fractional numbers across various contexts, including addition, subtraction, comparison, and mixed-form writing. Moreover, students demonstrated a complete inability to comprehend and solve word problems. Interestingly, despite these challenges, students excelled in the tenth question, which pertains to identifying and linking geometric shapes. This suggests a potential area of strength or interest among students in geometric concepts. Overall, the

analysis of Figure (2) underscores the need for targeted intervention and support to address students' deficiencies in fractional numbers, problem-solving skills, and comprehension of word problems, while also recognizing and nurturing areas of strength, such as geometric shapes.

Sixth-grade primary test results:

In Figure (3), the distribution of accurate responses among students across six questions shows percentages ranging from 42% to 89%. The findings indicate varying levels of proficiency in different mathematical areas. Students performed very well in geometry issues, achieving a high percentage of correct responses. They also demonstrated a good understanding of summation problems. However, their performance in subtraction and multiplication problems was deemed acceptable, suggesting room for improvement in these areas. Notably, students faced challenges in mastering division and story problems, as evidenced by their lower success rates in these categories. This highlights significant areas of difficulty for students and underscores the need for targeted support and intervention to address these challenges effectively. Overall, the analysis of Figure (3) emphasizes the importance of identifying specific areas of weakness in students' mathematical skills and providing tailored instruction and support to enhance their learning and mastery of mathematical concepts, particularly in division, geometry, and problem-solving.

5. Interpretation of Results

The researcher reached in light of the above and through previous studies and research that pointed to the difficulties of learning mathematics at the primary stage, such as the study of (Abdul Hakim Suleiman, 1991), the study of (Mahmoud Muhammad Hassan, 1991), the study of (Abdul Karim Marei, 1992), and the study (Howaida Radwan, 1992), the study (Ahmed Ahmed Awad, 1992), the study (Mustafa Al-Bustanji ,1993), the study (Tawfiq Abu Raida, 1993), the study (Younis Al-Younes, 1993), the study (Ibrahim Attia, 1994), the study (Ahmed Ibrahim Al-Sayyid, 1994), the study of (Abda Abu Sitta, 1994), the study of (Khairiya Ramadan et al., 1996), the study of (Ismail Al-Sadiq, 1997), the study of (Hassan Baltieh and Alaa Metwally, 2000), the study of (Hassan Awad Al-Jundi, 2004), the study (Ahmed Hassan, 2004), the study (Ihab Mashaly, 2005), the study (Howaida Hassan Abdel Hamid, 2005-2007), the study (Enas Muhammad, 2008), the study (Nermin Mahmoud, 2008), the study (Al-Farhati Al-Sayyid Mahmoud, 2009), and the study (Ahmed Ali Khattab, 2011) showed that most of the difficulties faced by primary school students in mathematics are:

First, learning difficulties facing first graders:

1- Difficulty distinguishing between similar numbers such as (17-71).

2- Difficulty writing two-digit numbers.

3- Difficulty in understanding the meaning of the number: “What does the number 5 or the number 24 mean?”

4- Difficulty distinguishing between the basic signs in arithmetic (+, -, ÷, ×)

5- Difficulty placing numbers in the ones, tens, and hundreds of columns.

6- Difficulty in solving some verbal problems.

Second: Learning difficulties faced by pupils in the second grade:

1- Difficulty distinguishing between different geometric shapes (triangle - square - rectangle)

2- Difficulty completing simple multiplication and division operations

3- Difficulty in finding double, half, or third numbers

4- Difficulty in solving some verbal problems

5- Difficulty pronouncing and writing two- and three-digit numbers

6-The difficulty of finding the relationship between currency denominations - units of time - units of length - units of mass.

Third: Learning difficulties faced by third graders:

1- Difficulty distinguishing between types of geometric lines (straight - broken line - curved - straight segment)

2- Difficulty using a ruler to measure geometric shapes.

3- Difficulty in pronouncing and writing three-digit numbers and later.

4- Difficulty in understanding some conceptual relationships such as (greater than / less than, above / below, longer than / shorter than).

5- Difficulty performing addition and subtraction operations for fractions and ordinary fractions with different denominators, such as 4/6 +3/5=

6- Difficulty distinguishing that multiplication is the opposite of division (8x7=56, 56÷7=8)

7- Difficulty in solving some verbal problems.

Fourth: The learning difficulties facing fourth-grade students:

1- Difficulty solving some verbal problems at their level.
2- Difficulty using engineering tools and measuring and identifying angles.
3- Difficulty distinguishing between a ray and a line segment.
4- Difficulty in comparing normal fractions.
5- Difficulty performing long division operations.
6- Difficulty organizing and tabulating data in a table.

7- Difficulty in finding the relationship between different units such as (kilometers, meters, centimeters, and decimeters and millimeters)

8- Difficulty solving some verbal problems related to finding the perimeter and area of some geometric shapes.

Fifth: Learning difficulties facing fifth-grade students:

1- The difficulty of representing currencies in geometric shapes.
2- Difficulty finding equivalent fractions.
3- Difficulty converting a real fraction to a mixed number and vice versa.
4- The difficulty of converting an ordinary fraction to a decimal fraction and vice versa.
5- Difficulty comparing regular fractions and mixed numbers.
6- Difficulty comparing fractions and decimal numbers.
7- Difficulty arranging a set of regular fractions in ascending or descending order.
8- Difficulty in finding the common denominator.
9- Difficulty grouping decimal fractions in ascending or descending order.
10- Difficulty adding and subtracting fractions that have no denominator.
11- Difficulty multiplying and dividing regular fractions.
12- Difficulty in multiplying and dividing decimals.
13- Difficulty in assigning multiplication to addition.
14- Difficulty in distributing multiplication over subtraction.
15- Difficulty in word problems on fractions.
16- Difficulty distinguishing between radius, chord, and diameter.
17- The difficulty of artistically drawing a set that intersects two sets.
18- The difficulty of writing the intersection group elements of two or more groups of a drawn art form.
19- The difficulty of drawing a group uniting two groups in an artistic form.
20- The difficulty of writing the elements of a group, the union of two or more groups of a drawn art form.
21- Difficulty distinguishing between the two symbols.
22- The difficulty of drawing the difference between two groups in an artistic form.
23- Difficulty in writing the group elements of the difference between two groups for two distant groups.
24- The difficulty of writing the completion of a group using a narrative method.
25- The difficulty of representing a group in artistic form.
26- The difficulty of not distinguishing between (x Uy), (x ∩ y) from a drawn art form.
27- The difficulty of finding the greatest combined action and the lowest common multiplier.
28- The difficulty of decomposing a number into prime factors.

Sixth: Difficulties facing the sixth grade of primary school

1- Difficulty understanding ratio, proportion, and proportional division.
2- Difficulty understanding the lateral and total area of a geometric shape.
3- Difficulty in finding the areas and volumes of geometric shapes.
4- Difficulty in drawing parallelograms and measuring their angles.
5- Difficulty performing mathematical operations.

Recommendations and suggestions:

First: Recommendations:

These points highlight crucial steps that the Directorate of Education can take to address learning difficulties, particularly in mathematics, and improve the overall educational experience for students:

1. Recognition of Importance: Emphasizing the significance of addressing learning difficulties, including those in mathematics, due to their profound impact on students' social, academic, and psychological well-being. This recognition underscores the need for proactive intervention and support from educational authorities.

2. Teacher Training: Providing in-service training for teachers on identifying and diagnosing learning difficulties, as well as implementing effective treatment strategies. This equips educators with the knowledge and skills necessary to support students facing challenges in mathematics and other subjects.

3. Enhanced Communication: Strengthening communication channels between families, teachers, and social workers to facilitate early identification of learning difficulties, analyze educational obstacles, and collaborate on finding solutions. This collaborative approach ensures a holistic support system for students.

4. Optimal Classroom Environment: Reducing teacher-to-student ratios and class sizes in primary schools to allow teachers adequate time to diagnose learning difficulties and implement modern treatment strategies effectively. This adjustment enables educators to provide personalized support to students.

5. Promotion Policies: Reconsidering policies on automatic promotion of primary school students to address the issue of promoting students with learning difficulties. Implementing measures to reduce automatic promotion rates can help identify and support struggling students more effectively.

6. Community Awareness: Raising awareness within the community about learning difficulties through parents' councils in schools and open discussions. By fostering understanding and support among parents and the wider community, societal attitudes towards learning difficulties can be positively influenced, leading to greater acceptance and support for affected students.

By implementing these recommendations, the Directorate of Education can create a supportive and inclusive educational environment that addresses the diverse needs of all students, particularly those facing learning difficulties in mathematics and other subjects. This proactive approach not only benefits individual students but also contributes to the overall improvement of the education system.

Second: Future research proposals:

These recommendations outline important strategies for addressing learning difficulties, particularly in mathematics, and improving educational outcomes for students:

1. Age-Specific Analysis: Researching to study the factors contributing to learning difficulties among students at different age stages. By identifying when these difficulties tend to increase, educators and policymakers can implement targeted interventions and support mechanisms to address them effectively at each developmental stage.

2. Integration of Audio-Visual Methods: Emphasizing the use of audio-visual aids when teaching mathematics to primary school students. Recognizing the impact of audio-visual stimuli in enhancing students' comprehension and retention of mathematical concepts, particularly for those with learning difficulties. Integrating multimedia resources into instruction can cater to diverse learning styles and facilitate a better understanding of mathematical concepts.

3. Comprehensive Analysis of Learning Difficulties: Investigating the interplay between various factors contributing to learning difficulties in mathematics and their effects on students' personality development and academic performance. Understanding the complex relationship between cognitive, emotional, and environmental factors can inform holistic interventions to address learning challenges effectively and promote students' overall well-being.

4. Utilization of Diagnostic Tools: Implementing surveys or diagnostic tools to systematically identify students with learning difficulties in mathematics. By

accurately assessing the prevalence and nature of learning difficulties, educators can tailor intervention strategies to meet the specific needs of individual students and allocate resources more effectively.

By prioritizing these strategies, educational stakeholders can develop proactive approaches to address learning difficulties in mathematics and enhance educational outcomes for all students. These efforts contribute to creating inclusive learning environments where every student has the opportunity to thrive academically and personally.

Obstacles:

In addition to the differences in their demands and the types of challenges they face, pupils' ages have a detrimental effect on them (ostracism and bullying). The absence of tools, which the teacher alone tries to obtain from outside the school, together with the program and time constraints, exacerbates the issue.

Actions suggested:

Setting lower-bound targets that align with the capabilities of students who struggle to master every objective can indeed be beneficial for their academic, behavioral, and psychological well-being. Here's why:

1. Promoting Success and Confidence: By setting attainable goals that are within the reach of students' abilities, educators can help students experience success and build confidence in their academic abilities. Success breeds motivation and a positive attitude towards learning, reducing feelings of disappointment and failure.

2. Preventing Negative Behavioral and Psychological Reactions: When students consistently struggle to meet overly challenging objectives, they may become frustrated, disengaged, or exhibit negative behaviors in response to feelings of inadequacy or failure. Setting realistic targets can mitigate these reactions and promote a healthier learning environment.

3. Fostering Incremental Progress: Lower-bound targets allow students to make incremental progress towards mastery of academic objectives. This approach acknowledges that learning is a gradual process and celebrates each step of progress, regardless of the pace.

4. Individualized Support and Differentiation: Tailoring targets to students' capabilities enables educators to provide individualized support and differentiation, ensuring that each student receives the assistance and resources they need to succeed. This personalized approach acknowledges and respects the diverse learning needs of students.

5. Maintaining Motivation and Engagement: By setting achievable targets, students are more likely to remain motivated and engaged in their learning journey. They are less likely to become discouraged or disinterested, leading to sustained effort and investment in their academic pursuits.

Overall, setting lower-bound targets for students who struggle with mastering objectives promotes a positive learning experience, enhances self-esteem, and fosters a growth mindset. It is an essential strategy for supporting the academic success and holistic development of all students, regardless of their learning pace or abilities.

5. Conclusion:

In summary, this study underscores the perception of mathematics education as a challenging subject throughout primary school. This finding aligns with the perspective of educational practice. Moreover, the research identifies specific themes within the mathematics curriculum that are consistently viewed as more challenging than others, persisting across all primary school grades. The implications of these findings suggest a need for educators to develop targeted interventions aimed at preventing mathematics learning difficulties or addressing deficiencies identified within the curriculum. By leveraging insights gained from the summary of challenges associated with various mathematics curricular areas, educators can tailor their instructional approaches effectively. The study further reveals a dynamic nature in the challenges students face, with some issues emerging in the first grade and diminishing in subsequent years, while others intensify over time. These challenges serve as focal points for the researcher's endeavors to address within the study.

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