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Reflection on some factors that influence academic failure in mathematics among 4th grade students at School No. 90/Tomboco in the 2024/2025 school year.

Reflection on Some Factors That Influence Academic Failure in Mathematics Among 4th Grade Students at School no. 90/ Tomboco in the academic year 2024/2025

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SUMMARY

Academic failure in mathematics among fourth-grade students in the single class at primary school no. 90/ Tomboco has been a recurring challenge in the educational environment, compromising the development of essential skills for continuing their studies. This study aims to reflect on the main factors influencing these difficulties, analyzing pedagogical, methodological, socioeconomic, and emotional aspects that negatively impact the teaching and learning process. Mathematics, by its cumulative and abstract nature, requires a solid foundation from the early years, and the absence of effective teaching can create gaps that hinder the assimilation of new content. Among the factors contributing to academic failure, the following stand out: teaching methodologies used, often decontextualized from the students' reality; the lack of appropriate teaching resources; teacher training; low parental involvement in school support; and student demotivation in the face of the difficulties encountered. Furthermore, emotional factors, such as anxiety and fear of mathematics, also play a significant role in academic performance. This research seeks to understand these influences through a literature review and investigation in a school environment, analyzing the strategies adopted by teachers and the impact of students' socioeconomic conditions on their learning. Based on the data obtained, the aim is to propose more effective pedagogical approaches that can make the teaching of mathematics more accessible, stimulating, and meaningful for students. Thus, it is hoped to contribute to the reduction of school failure and the improvement of academic performance in the subject.

Keywords: School failure, Mathematics, Learning difficulties, Pedagogical factors.

ABSTRACT

School failure in Mathematics among 4th-grade students of the single class at Primary School Number 90/ Tomboco has been a recurring challenge in the educational environment, compromising the development of essential skills for the continuity of studies. This study aims to reflect on the main factors influencing these difficulties, analyzing pedagogical, methodological, socioeconomic, and emotional aspects that negatively impact the teaching and learning process. Mathematics, due to its cumulative and abstract nature, requires a solid foundation from the early years, and the absence of effective teaching can create gaps that hinder the assimilation of new content. Among the factors contributing to school failure, the teaching methodologies used often disconnected from the students'

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reality the lack of appropriate teaching resources, teacher training, low parental involvement in school monitoring, and students' demotivation in the face of challenges stand out. Additionally, emotional factors such as anxiety and fear of Mathematics also play a significant role in academic performance.
The research seeks to understand these influences through a literature review and an investigation in the school environment, analyzing the strategies adopted by teachers and the impact of students' socioeconomic conditions on their learning. Based on the data obtained, the study aims to propose more effective pedagogical approaches that can make Mathematics teaching more accessible, engaging, and meaningful for students. Thus, it is expected to contribute to reducing school failure and improving academic performance in the subject.

Keywords: School failure, Mathematics, Learning Difficulties, Pedagogical Factors.

1. INTRODUCTION

Mathematics is a fundamental discipline in the cognitive and academic development of... students, as it contributes to the development of logical thinking, problem-solving, and decision-making. decision-making in various areas of life. However, academic failure in this subject has been a growing concern, especially among the 4th grade students at Number 1 Primary School 90/Tomboco. Difficulty in understanding mathematical concepts can compromise the student performance and negatively influence their academic trajectory.

The aim of this study is to reflect on the main factors that contribute for failure in the subject of Mathematics, considering pedagogical and methodological aspects, socioeconomic and emotional factors that impact the teaching and learning process. The absence of A lack of a solid foundation in the early school years can hinder the assimilation of new content. leading to a cumulative effect of difficulties throughout the academic journey.

Therefore, this article seeks to identify the challenges faced by students and teachers. in the teaching of Mathematics, as well as analyzing strategies that can make learning more Accessible and meaningful. Based on research in the school environment and a review. Based on bibliographic research, the aim is to propose solutions that contribute to improving the performance of students and to reduce academic failure in this essential subject.

2. THEORETICAL FRAMEWORK

Academic failure in mathematics has been extensively studied by various researchers. researchers in the field of education, since the discipline plays a fundamental role in development of logical-mathematical skills and the formation of critical thinking in students. According to Piaget (1972), learning mathematics is directly related to the stage cognitive development in children requires teaching that respects the stages of... Concrete and abstract thinking. In the context of the 4th grade, students are in a phase of... Transition, where they begin to deal with more abstract concepts, which can present a challenge. significant if appropriate methodologies are not used.

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It emphasizes the importance of social interaction in learning, highlighting that learning It occurs more effectively when there is teacher mediation and active student participation. (Vygotsky 1978, p 26).

However, one of the factors that influences academic failure in mathematics is precisely... the methodology used by teachers, which does not always favor the construction of knowledge of in a participatory and contextualized way. Furthermore, according to Ausubel (1968), learning Significant understanding occurs when the student is able to relate new concepts to their existing knowledge. previous. Thus, the lack of a solid foundation in the early years can compromise the understanding of more advanced content.

In addition to pedagogical and methodological factors, it is necessary to consider the following aspects: Socioeconomic and emotional factors that impact student performance.

Studies indicate that children from families with low socioeconomic status They face greater difficulties in learning due to a lack of adequate educational resources. less parental involvement and potentially poor study conditions. (Oliveira 2015, 25p12).

On the other hand, math anxiety, as discussed by Ashcraft (2002), can generate a learning block, leading students to avoid challenges related to the subject and, Consequently, they exhibit low performance.

Given these theoretical foundations, the present study seeks to understand in a way This study delves into the factors that contribute to academic failure in mathematics in the 4th grade of the school. Number 90/Tomboco, analyzing the difficulties faced by students and proposing strategies. pedagogical approaches that can improve the teaching and learning of the subject.

MATERIAL AND METHOD

For our scientific work, **"Reflection on some factors that influence the Academic failure in mathematics among 4th grade students at School number 90/** The following materials and methods were selected for the " **Tomboco 2024/2025" project :**

Materials and Methods

1. Type of Search

Our research is characterized as both qualitative and quantitative, with a descriptive and exploratory approach.

2. Study Location

The study was conducted at School Number 90, located in Tomboco, during the school year.

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2024/2025.

3. Population and Sample

Target population: Students in the 4th grade of School Number 90, Tomboco, during the 2024/2025 school year, Teachers, and Parents/Guardians.

Sample. A representative random sample of students, teachers, and parents/guardians was selected to obtain a comprehensive view of the factors contributing to academic failure in mathematics.

4. Data Collection Instruments

For this study, questionnaires were administered to students, teachers, and parents/guardians to identify difficulties and perceptions about mathematics education. **Direct observation** was also conducted in the classroom to analyze teacher-student interaction and the difficulties faced by students.

5. Analysis Procedures

The data collected were analyzed using descriptive statistics (frequencies, means). and percentages) for the questionnaires and content analysis for the interviews and observations.

RESULTS AND DISCUSSION

2.1. Factors that influence school failure in mathematics.
2.1.1. A Pedagogical, Socioeconomic, and Emotional Approach

Factors that influence school failure in mathematics: A pedagogical approach.

The teaching of mathematics faces significant challenges, especially in the early years. Schooling, when students are building the foundations of logical-mathematical knowledge. A The pedagogical approach adopted by teachers plays a crucial role in this process, because It directly influences how students assimilate content. However, several Learning difficulties can contribute to academic failure in the subject, compromising the... student learning.

1. Inadequate Teaching Methodologies

The use of traditional methodologies, centered on memorizing rules and formulas, without the Due to lack of contextualization, it can hinder students' understanding of mathematical concepts. According to Vygotsky (1978), learning occurs more effectively when there is social interaction. and the teacher's mediation, allowing students to actively construct knowledge. However, when teaching is based solely on theoretical expositions and mechanical exercises, the Students tend to develop difficulties in the practical application of the content.

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2. Lack of Teaching and Technological Resources

The lack of adequate teaching materials, such as educational games, materials Manipulatives and digital resources can make teaching mathematics less attractive and more difficult. development of logical thinking. According to Piaget (1972), children learn best when They have the opportunity to manipulate objects and experience concrete situations before dealing with... abstract concepts. Thus, the lack of pedagogical resources limits the possibilities of teaching and learning, harming student performance.

3. Teacher Training and Development

The teacher's theoretical and practical knowledge of the subject is essential for effective teaching. effective. However, a lack of ongoing training in innovative methodologies can result in difficulties in adapting teaching strategies to the needs of students. According to According to Ausubel (1968), meaningful learning occurs when the teacher is able to connect new concepts. content based on students' prior knowledge. Therefore, it is essential that teachers receive adequate training to develop dynamic and interactive approaches in teaching Mathematics.

4. Assessment and Diagnosis of Learning Difficulties

Assessment plays an essential role in identifying students' difficulties. However, when the evaluation process is limited to standardized tests and does not consider the individual differences of students, it can reinforce feelings of failure and demotivation. It is necessary to adopt diverse assessment tools, such as observations, practical activities and self-assessments, allowing for a more accurate diagnosis of difficulties and the application of pedagogical interventions. suitable.

5. Student Motivation and Engagement

Disinterest in mathematics is often related to how the subject is taught. taught. When the content is presented in a decontextualized manner and without relation to In the reality for students, motivation to learn tends to decrease. To reverse this situation, it is It is essential to adopt pedagogical strategies that make learning more meaningful, such as the use of Everyday problems, mathematical games, and interdisciplinary projects.

Factors that influence school failure in mathematics: An approach. Socioeconomic

Students' academic performance in mathematics does not depend solely on the methods of

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teaching methods or pedagogical strategies adopted in the classroom. The socioeconomic conditions of Families and the school community play a fundamental role in learning. directly influencing access to educational resources and the monitoring of studies at home. and student motivation. Several studies indicate that students from different backgrounds Those from disadvantaged socioeconomic backgrounds tend to experience greater difficulties in the subject, increasing school failure rates.

1. Family Economic Conditions and Access to Educational Resources

Socioeconomic inequalities significantly affect the teaching process and Learning mathematics. Students from low-income families often face challenges. difficulties in accessing basic materials, such as books, notebooks, and mathematical instruments (rulers, calculators, abacuses, among others). Furthermore, the lack of technological devices, such as Computers and internet access limit the possibility of supplementing studies through Online activities, educational games, and explanatory videos.

In more economically privileged environments, students often have access to support. Extracurricular activities, such as private tutoring or academic support, contribute to better... performance. In families with financial difficulties, students often need dividing your time between studies and household responsibilities or even informal work, reducing the time available for learning mathematics.

2. Education and Parental Involvement in the Learning Process

Parents' level of education has a direct impact on their children's academic performance. children. Parents with low levels of education may have difficulty helping their children with homework. Mathematics, which reduces the possibility of reinforcing learning at home. As pointed out by According to Bourdieu (1986), cultural capital influences students' educational trajectories, since families Those with higher levels of education tend to value education more and encourage study habits. systematic.

Furthermore, a lack of parental involvement in monitoring school performance can result in... Student demotivation and the absence of a favorable learning environment. Communication Communication between school and family is essential to identify difficulties and promote strategies that help in... Learning mathematics.

3. School Infrastructure and Quality of Education

The precarious structural conditions of schools are also a determining factor in School failure in mathematics. Institutions with overcrowded classrooms, lack of teaching materials and

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The lack of adequate spaces for practical activities hinders the implementation of methodologies.
innovative.

Furthermore, schools located in low-income communities often face...
challenges such as a shortage of qualified teachers and high staff turnover, impacting
This negatively impacts the continuity of education. The lack of investment in teacher training and acquisition...
The lack of adequate materials contributes to the poor performance of students in the subject.

4. Impact of Hunger and Food Insecurity on Learning

Food insecurity is a reality in many low-income communities and has
direct effects on learning mathematics. Children who attend school without a
Proper nutrition can lead to difficulties concentrating, lower cognitive performance, and greater...
A tendency towards fatigue and demotivation. Studies indicate that insufficient nutrition can...
to compromise brain development and directly affect logical reasoning and the ability to
solve mathematical problems.

The presence of school feeding programs can help minimize this.
The problem is ensuring that students have the basic conditions to concentrate on learning.
However, when these programs are insufficient or ineffective, the impact of hunger on
Academic performance becomes even more serious.

5. Violence and the Family Environment

The family and community environment exerts a great influence on the school performance of
Students. Children who grow up in contexts of domestic violence or are exposed to crime.
They may exhibit high levels of stress and anxiety, factors that hinder concentration and...
learning. In addition, family instability, such as divorces, absence of one of the parents or
Frequent changes of residence can negatively affect students' school engagement.

In communities with high rates of violence, fear and insecurity can limit the
School attendance is disruptive, hindering the continuity of education and compromising learning.
Mathematics. Psychopedagogical support in schools and the implementation of social programs are
fundamental to mitigating the impacts of these adversities.

Conclusion

Socioeconomic factors play a significant role in school failure in
Mathematics, creating barriers that hinder access to quality education. The lack of
educational resources, low parental education levels, poor school infrastructure,
Food insecurity and a troubled family environment are elements that directly affect the

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student performance. To minimize these inequalities, it is essential that public policies be implemented to ensure better teaching conditions, support for families and encouragement of Active parental involvement in their children's school life. Only through integrated actions will this be achieved. It is possible to reduce failure rates and provide more effective and equitable learning.

Factors that influence academic failure in mathematics: An emotional approach.

School performance in mathematics is not determined solely by pedagogical factors and socioeconomic factors, but also emotional aspects that affect motivation, self-confidence and The ability to face academic challenges. Many students develop feelings of anxiety. and insecurity regarding the subject, which can significantly compromise their learning. and performance. Understanding these emotional factors is essential for adopting strategies that Reduce school failure and promote more efficient and welcoming teaching.

1. Math Anxiety and Fear of Failure

Math anxiety is a phenomenon widely studied by psychologists and educators. characterized by feelings of tension, apprehension, and fear when dealing with activities mathematics. According to Ashcraft (2002), students who experience high levels of anxiety in Mathematics students tend to avoid the subject, and they have difficulty solving problems and To demonstrate poor performance in assessments. This fear may be the result of negative experiences. previous factors included unmotivating teaching methodologies or even social pressure to obtain Good results.

The fear of academic failure can also generate emotional blocks that hinder... Learning. When students believe they are not capable of understanding mathematics, they may to develop a pattern of giving up, avoiding challenges and reducing their efforts to learn.

2. Low Self-Confidence and Academic Self-Esteem

Self-confidence plays a key role in motivating students to... Learning. Students who internalize the belief that they "are not good at math" tend to having difficulty developing effective problem-solving strategies. According to Bandura (1997) states that the perception of one's own ability, known as self-efficacy, influences directly impacts engagement and persistence in the face of school challenges.

Low academic self-esteem can be reinforced by negative feedback from teachers and family members, as well as comparison with better-performing colleagues. When mistakes They are treated as definitive failures, rather than learning opportunities, and students may

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to lose motivation and develop a negative view of their mathematical abilities.

3. Family Pressure and Exaggerated Expectations

The pressure exerted by parents and guardians to obtain good grades in Mathematics can generate Stress and anxiety in students. In some families, discipline is seen as an indicator of intelligence and academic success, which increases the emotional burden on the child. When the Expectations are exaggerated and there is no adequate support for learning; the student may Feeling frustrated and unable to meet demands, negatively impacting performance and well-being. emotional.

On the other hand, a lack of encouragement and support can also be detrimental. Students Those who do not receive emotional support to cope with their math difficulties may feel Demotivated and undervalued, which contributes to academic failure.

4. School Environment and Relationship with Teachers and Peers

The school environment has a significant impact on the emotional development of students. Teachers who adopt a rigid and punitive stance towards mistakes may increase the risk of errors. Student anxiety can hinder learning. The fear of being ridiculed in the classroom... This class can lead students to avoid participating in activities, hesitate to ask questions, and... developing an aversion to mathematics.

Furthermore, relationships with peers also influence students' emotional state. Bullying or constant performance comparisons can affect self-confidence. students and reduce their willingness to learn. Building a welcoming school environment and Being encouraging is essential to strengthening students' self-esteem and motivation.

5. Lack of Coping Strategies and Emotional Regulation

Many students lack effective strategies for dealing with frustration and stress. resulting from mathematical difficulties. Without proper guidance, they may develop Avoidance behaviors, such as procrastination, disinterest, or even total rejection of... discipline.

Emotional intelligence, as discussed by Goleman (1995), is an essential factor for Academic success. Teaching students to manage their emotions and persevere in the face of difficulties. and viewing mistakes as part of the learning process can contribute to a better relationship with... Mathematics.

Conclusion

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Emotional factors play a crucial role in school failure in Mathematics. Anxiety, low academic self-esteem, family pressure, the school environment, and... A lack of appropriate emotional strategies are elements that can compromise performance. students. To minimize these impacts, it is essential to promote a more humanized education and welcoming environment that values students' efforts, encourages confidence in their abilities, and provides Emotional support to face mathematical challenges. In this way, it will be possible to create a A more positive and effective learning environment, reducing school failure rates in the subject.

MATERIALS AND METHODS

1. Type of Search

This study is characterized as qualitative and descriptive research, which seeks to... to understand the factors that influence academic failure in mathematics among students. Students in the 4th grade of Primary School number 90, in Tomboco, during the 2024/2025 school year. A A qualitative approach allows for an in-depth exploration of the perceptions of students and teachers. and guardians, while descriptive analysis helps in identifying the main difficulties and challenges faced in the teaching and learning of Mathematics.

2. Population and Sample

The study population comprises 4th grade students, mathematics teachers, and Parents/Guardians of Primary School number 90. The sample will be selected in a way intentional, including:

- **10 fourth-grade students ,** chosen based on their performance in Mathematics (both those with difficulties and those with better performance, for comparison).
- **3 mathematics teachers,** to understand the methodologies used, the difficulties encountered, and the pedagogical strategies adopted.
- **5 caregivers,** to assess family involvement and socioeconomic factors that may impact learning.

3. Data Collection Instruments

Data collection will be carried out using different instruments, ensuring a thorough analysis. A comprehensive overview of the factors that contribute to academic failure in mathematics:

- **Classroom observation:** Direct observation will be conducted during math classes, analyzing the methodologies used by teachers, the level of student participation, and the difficulties encountered during activities.
- **Semi-structured interviews:** Interviews will be conducted with teachers and parents/guardians, addressing issues related to teaching strategies, family involvement, and perceptions of students' difficulties.
- **Questionnaires:** Students will answer questionnaires adapted to their age group, with questions about their interest in Mathematics, difficulties encountered, and their perception of the subject.

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4. Data Analysis Procedures

The data collected will be analyzed using content analysis techniques.
categorizing the main factors that influence school failure. The interpretation of
The results will be based on theoretical frameworks in the field of education, including studies on...
Learning mathematics, socioeconomic and emotional factors in academic performance.

5. Ethical Considerations

The research will follow the ethical principles of respect and confidentiality, guaranteeing the
The anonymity of the participants and the use of the data only for academic purposes. Parents or
Parents or guardians of the selected students will be informed about the research and must authorize it.
Student participation is contingent upon a free and informed consent form.

Conclusion

The methodology adopted will allow for a detailed analysis of the factors that hinder the
Learning mathematics in the 4th grade of Primary School number 90. Based on the data
Once the data is collected, it will be possible to suggest more effective teaching strategies to improve performance.
of the students and reduce the rates of academic failure in the subject.

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