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The influence of reading comprehension on the resolution of mathematical problems in Basic General Education students

La influencia de la comprensión lectora en la resolución de problemas matemáticos en los estudiantes de Educación General Básica

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Abstract

The research was carried out due to the high rate of difficulties in understanding mathematical problems for their respective resolution, which is why the objective is to determine the influence of reading comprehension on the resolution of mathematical problems in sixth grade students of Education. Basic General of the Diez de Agosto Educational Unit in the 2022-2023 school year. Which, the methodology was used with a positivist paradigm and a quantitative approach, in addition the design was non-experimental because the variables were not manipulated directly, also the type was documentary because a review of the literature that supported the research was carried out. Likewise, the level was descriptive because the dimensions and indicators of the variables were characterized. On the other hand, the study was carried out on 36 parallel sixth grade students "A" and a questionnaire was applied to collect data. Finally, the results that were determined were that reading interpretation influences the resolution of mathematical problems.

Keywords: reading comprehension, problem solving, mathematics, literature

Resumen

La investigación se realizó por el alto índice de dificultades en la comprensión de problemas matemáticos para su respectiva resolución, es por ello que, el objetivo es determinar la influencia de la comprensión lectora en la resolución de problemas matemáticos en los estudiantes de sexto grado de Educación General Básica de la Unidad Educativa Diez de Agosto en el año lectivo 2022-2023. Lo cual, se utilizó la metodología con un paradigma positivista y un enfoque cuantitativo, además el diseño fue no experimental porque no se manipulan las variables directamente, también el tipo fue documental debido a que, se realizó una revisión a la literatura que sustentaron la investigación, así mismo el nivel fue descriptivo porque se caracterizó las dimensiones e indicadores de las variables. Por otro lado, el estudio se realizó a 36 estudiantes de sexto grado paralelo "A" y se aplicó un cuestionario para la recolección de datos. Finalmente, los resultados que se determinaron fueron, que la interpretación lectora influye en la resolución de problemas matemáticos.

Palabras clave: comprensión lectora, resolución de problemas, matemática, literatura

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Introduction

Currently, human beings depend on the information provided by science and the media. Therefore, the ability to read and comprehend texts is essential in daily life. However, recent studies reveal that students have limited reading comprehension, which has led to several learning difficulties, such as poor vocabulary, deficient verbal fluency in reading, and a lack of text interpretation across various subjects. This situation represents a serious challenge for educational systems, as it limits young people's opportunities for personal and professional development.

At an international level, according to the Progress in International Reading Literacy Study (PIRLS, 2021), countries such as Spain scored 521, which is below the required standard, while Ireland, England, and Croatia have an intermediate level of reading comprehension. On the other hand, data from UNESCO, obtained through a Regional and Comparative Study presented in November 2021, indicate that four out of five children in Latin America and the Caribbean cannot understand a simple text. Additionally, it is noted that since 2013, the writing and reading comprehension level of primary education students in Ecuador has not improved.

Under these circumstances, it is important to remember that, as a result of the pandemic, the country has experienced a significant educational delay, particularly in subjects such as Language and Literature and Mathematics. Nationally, various schools in Ecuador exhibit problems stemming from limited reading comprehension, significantly affecting students' learning processes.

According to the National Institute of Educational Evaluation (INEE, 2018):

The average performance in Ecuador is 377, which highlights the severe difficulties that many Ecuadorian students face in situations requiring problem-solving skills in mathematics. A total of 70.9% of Ecuadorian students do not reach level 2, which is categorized as the basic performance level in mathematics (p. 44).

Additionally, regarding reading performance, the following is stated:

Ecuador's average score in reading is 409, placing it at level 2, which corresponds to the minimum competency level. It is important to mention that there are students in Ecuador whose performance is even below level 1a. The proportion of students in Ecuador who reach level 1b at most is 15.5% (INEE, 2018, p. 43).

In this context, these percentages reveal that only a minimum number of students achieve a high level of reading comprehension, while the majority can only complete basic reading comprehension tasks, such as recognizing implicit information in the text—one of the simplest questions in the PISA assessments. This data indicates that Ecuador faces a severe educational lag, which worsened with the arrival of the pandemic, creating a challenge for educators. Teachers must work to bridge this gap and reinforce essential content to help students develop the necessary skills and abilities related to reading comprehension.

Furthermore, during pre-professional teaching practices, this issue has been observed at the “Diez de Agosto” Educational Unit among sixth-grade EGB students. It is therefore essential to evaluate and analyze the influence of these two areas of knowledge and how one affects the other. When students face a contextualized math problem, they need strong reading comprehension skills to understand both the statement and the key terms that will guide them toward a solution. For this reason, teachers must become aware of this problem and implement solutions or methodologies to address these learning difficulties. Various studies indicate that “reading comprehension has a high impact on curricular areas; when students do not understand what they read, they will consequently struggle to comprehend a subject, which affects their academic performance and professional development” (Barrera et al., 2019, p. 28).

This research will be conducted with the aim of determining the impact of reading comprehension on mathematical problem-solving, since “it has been portrayed as the resolution of routine exercises that are more related to mechanical or memorization processes” (Patiño et al., 2021, p. 459). Therefore, analyzing a mathematical problem involves reading and understanding it so that the student can solve it successfully. This is where reading comprehension comes into play because if the student faces difficulties in the mathematical reasoning process, they will struggle to decode the mathematical data provided for solving the given problem.

From another theoretical perspective, this work can serve as a contribution to future research focused on the same subject. From a pedagogical standpoint, it will allow teachers to recognize that reading comprehension may be one of the causes preventing students from solving mathematical problems efficiently. Additionally, it will encourage teachers to reflect and commit to implementing pedagogical strategies such as problem decomposition, the use of graphic representations, collaborative learning, guided questioning, among others, to address this issue. From a practical perspective, it will enable teachers to work alongside the Language and Literature department to emphasize in-class activities that help develop reading comprehension. Meanwhile, the mathematics teaching staff should conduct a self-assessment of their pedagogical practices, including motivational and anxiety-related factors affecting sixth-grade students.

For this reason, a study will be conducted at Unidad Educativa Diez de Agosto, located in the province of Pichincha, canton Quito, to determine how the level of reading comprehension influences mathematical problem-solving. This will help assess the extent to which children can identify unknowns and data, as well as how they formulate solutions to mathematical problems. Furthermore, it is essential to highlight the role of the educational institution in strengthening reading comprehension habits, as it plays a crucial role in helping students develop proper study skills.

Through this research, the direct beneficiaries will be the sixth-grade students of General Basic Education at Unidad Educativa Diez de Agosto, as it will help them develop logical-mathematical reasoning skills through the implementation of reading activities with mathematical components, such as tables, statistical graphs, the Cartesian plane, and the history of mathematics.

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1. Reading Comprehension

Reading comprehension is a skill that allows students to have a literary interpretation of what they read, infer implicit data and information, and thus optimize their level of critical and reflective analysis. Moreover, it is a process of interpretation through which the reader must identify relevant elements within the text in order to decode the information and understand what they are reading (Anaya et al., 2019).

1.1. Literary Interpretation

Literary interpretation is the first level considered within reading comprehension. Vargas (2020) states that literary interpretation is the foundation for an individual to develop optimal comprehension of any type of text, as it enables the retrieval of explicitly stated data within the text, allowing the formulation of assumptions for problem-solving.

Additionally, at the literary level, the reader recognizes phrases, keywords, main ideas, and secondary ideas. Therefore, this level of reading focuses on identifying elements explicitly presented within the text (Cervantes et al., 2017).

1.1.1. Data Recognition

This refers to the student's ability to identify the information present in a mathematical problem. According to Cimpoies (2019), this involves breaking down a problem into different sequential actions until reaching the correct result. Thus, one of the key components to distinguish in a mathematical problem is the unknown, which represents what needs to be found, as well as the given data, which may appear explicitly or implicitly within the text.

Similarly, data recognition is one of the first steps students must take when solving a mathematical problem, as it allows them to establish the main information that will guide them toward the answer (Arrieta & Montenegro, 2021).

1.2. Inference of Texts

The inferential level is one of the three levels that distinguish reading comprehension. It refers to the "ability to use logical reasoning to link prior ideas with new ones through a schematic mental process in the construction of interpretations, which, in some cases, relies on certain implicit clues present in the text" (Olivares, 2019, p. 9).

This level of comprehension involves establishing relationships between parts of the text to extract information, conclusions, or aspects that are not explicitly written in the text, meaning implicit information that can be accessed through prior knowledge (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2019).

1.2.1. Level of Discovery of the Unknown

"This level is characterized by investigating and becoming aware of meanings that allow the reader to read between the lines, assume, and deduce the implicit" (Cervantes et al., 2017, p. 78). For this reason, relationships that go beyond the literal reading are sought, broadening the explanation of the text, adding information and previous experiences, connecting what is read with prior knowledge, formulating hypotheses, and generating new ideas—in other words, the objective is to draw conclusions.

In this way, the student is able to recognize and identify the existence of an unknown value in a problem that can be determined (Diosa, 2019). In this regard, the unknown in a problem is the unknown value that is intended to be found.

1.2.2. Level of Recognition of Mathematical Operations

This refers to distinguishing one mathematical operation from others within a mathematical problem. Therefore, it is necessary to develop the ability to think, reason, communicate, apply, and assess the relationships between mathematical problems and mathematical operations (Ministry of Education, 2018).

Furthermore, this level is aimed at enabling students to construct definitions of different operations to achieve the objective of the activity and to learn the corresponding operations in a meaningful way (Guzmán et al., 2021). For this reason, recognizing operations allows for solving various real-life situations by applying logical abilities and reasoning appropriately.

1.3. Critical Thinking

Critical thinking is the ability of human beings to be responsible and aware of why they act in certain ways and the limits of their actions (Parra & Crespo, 2020). Therefore, critical thinking develops with practice and is demonstrated by observing situations and reflecting on them.

Similarly, critical thinking enables students to analyze, organize, comprehend, learn to take a stance, and argue about a topic presented by the teacher (Romero & Chávez, 2021). For this reason, in mathematics, it is used to arrive objectively at the correct response to a specific mathematical topic.

1.2.3. Application of Methods for Solving Mathematical Problems

Numerous authors have contributed methods for problem-solving to stimulate the development of mathematical thinking. That is, their application helps students find the solution that best fits their specific situation and then solve a problem efficiently (Díaz & Díaz, 2018).

Currently, there are various procedures for solving mathematical problems, including Pólya's Method (1945) (as cited in Oliveros et al., 2021), which establishes four phases: understanding the

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problem, devising a plan, executing the plan, and reflecting on the solution and the problem-solving process. Each phase includes a series of questions intended to guide the student correctly on how to solve a mathematical problem.

2. Mathematical Problem Solving

Mathematical problem solving is a process based on an analysis of concepts through logical-mathematical reasoning and disciplinary knowledge, stimulating skills that enable the development of basic learning.

Furthermore, problem solving is a skill that involves engaging in cognitive activities. For this reason, solving mathematical problems is a complex process that ranges from reading comprehension to the formulation and solution of equations (Gualdrón et al., 2020). A mathematical problem, therefore, consists of elements such as unknowns and given data, which are provided through a clear and precise statement.

2.1. Process

The term mathematical process is understood as “a set of actions performed by a person pursuing the achievement of an objective” (Naveira & Valdivia, 2022, p. 2). In other words, it is a series of ordered steps that students must follow to solve a problem based on mathematical statements.

Likewise, it is recognized as a sequence executed through a series of steps to achieve meaningful learning, considering that it always follows a structured order and requires a thorough understanding of the problem itself (García, 2019).

2.2. Application of Logical Procedures for Problem Solving

According to Díaz & Díaz (2018), the following logical procedures should be applied:

- Read the problem carefully.
- Identify keywords that express relationships in the problem.
- Identify the variables involved in the problem.
- Express the fundamental idea of the problem in your own words.
- Which of the given data are necessary to find the solution? Are these data sufficient?
- In what units should the result be expressed, or is it dimensionless?

Through these questions, the teacher can guide students’ cognitive activity to help them solve the given mathematical problem efficiently.

2.3. Reasoning

Reasoning is a mental process in which cognitive skills are developed, allowing humans to understand the phenomena around them. It is a capability that enables learning, problem-solving, and reaching logical conclusions. According to Jaramillo & Patiño (2022), not all people have the same ability to reach solutions to problem situations, and these skills must be developed through practice. Reasoning is applied differently by each individual, but everyone possesses this capacity, which develops over time as knowledge is acquired throughout life.

2.3.1. Application of Numerical Language

Numerical language is based on the use of numbers of any type—natural, decimal, fractional, rational, irrational, and even imaginary—with the purpose of expressing magnitudes combined with mathematical symbols.

This language has its own alphabet and composition rules, allowing us to perform mathematical operations and solve various mathematical problems. Núñez & Tuesta (2020) state that mathematical competence is not acquired all at once, suddenly, or spontaneously, but rather accumulatively from an early age. This is why one of the first things taught in early education relates to quantity—even before learning letters. It is essential for children to be familiar with this language since it is widely used in the field of mathematics.

3. Learning

Learning is a cognitive process through which individuals acquire or change their skills, abilities, knowledge, or behaviors through direct experience, observation, reasoning, or instruction. Learning, in essence, is the process of building experience and adapting it to future situations. García (2019) mentions that learning consists of acquiring knowledge and skills based on daily experiences, which can be applied in various aspects of life. Human learning is closely related to personality development and occurs optimally when the individual is motivated, meaning when they want to learn and actively try to do so. To achieve this, they use their memory, attention span, and capacity to acquire and enrich their knowledge.

3.1. Interpretation of Problem Solutions

When solving a mathematical problem, it is essential to provide a clear and concise explanation for better understanding. This requires not only considering mathematical concepts and operations but also linguistic and semantic knowledge. Additionally, understanding the context in which the problem is framed is crucial to giving coherent meaning to the statements (Blanco & Mancilla, 2021).

Furthermore, for a student to arrive at the solution to a problem, they must be able to answer the given question in their own words. This requires taking into account the provided data, the context,

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the mathematical operation performed, and connecting prior knowledge with newly acquired classroom concepts (Gualdrón et al., 2020).

3.2. Reading Comprehension and Mathematical Problem Solving

Reading comprehension is closely related to mathematical problem solving, as it provides students with the necessary tools to properly interpret problem statements, identify relevant information, and select appropriate strategies for solving and communicating results (Ramírez, 2023).

Moreover, when solving a mathematical problem, comprehension must be prioritized because "these are not isolated processes assigned to a specific discipline; rather, they complement and integrate with each other. A strong comprehension process facilitates understanding problem statements" (Montero & Mahecha, 2020, p. 15). Therefore, reading comprehension and mathematical problem-solving are interconnected and should be taught in a constructive and participatory manner to ensure that children understand what they are solving and achieve meaningful learning.

Objective of the Study:

To determine the influence of reading comprehension on problem-solving in mathematics among sixth-grade students of General Basic Education at Unidad Educativa Diez de Agosto during the 2022-2023 academic year.

Methodology

2.1. Type of Research

The type of research was documentary since primary and secondary sources supporting the study were consulted. This research is based on the positivist paradigm with a quantitative approach because statistical measurements were applied, and statistical tables and graphs were created, given that reading comprehension plays a crucial role in mathematical problem-solving.

2.2. Research Level

The research level was descriptive because the characteristics of reading comprehension and mathematical problem-solving were detailed along with their respective indicators.

2.3. Research Design

A non-experimental design was used because the variables were not directly manipulated. It was also observational, as it allowed for the use of observation and the recording of all events involved, starting from identifying educational problems present in the educational institution where pre-professional practices were carried out.

2.4. Population

The research population consisted of sixth-grade students in General Basic Education, section "A," at Unidad Educativa Diez de Agosto during the 2022-2023 academic year. The distribution was as follows:

Table 1

Sixth Grade of General Basic Education

Gender	Number of Students
Female	21
Male	15
Total	36

2.5. Sample

Since the population did not exceed 200 participants, a non-probabilistic convenience sample was used, and the study was conducted with all 36 students from Unidad Educativa Diez de Agosto. The following inclusion and exclusion criteria were considered:

Inclusion criteria:

- 10-year-old students
- Regular class attendance
- Students with difficulties in reading comprehension that affect mathematical problem-solving
- Possession of informed consent and assent certificates

Exclusion criteria:

- Students older than 10 years
- Irregular class attendance
- Students without difficulties in reading comprehension for mathematical problem-solving
- Lack of informed consent and assent certificates.

2.6. Unit of Analysis

The unit of analysis consists of sixth-grade students in section "A" of General Basic Education at Unidad Educativa Diez de Agosto since the research aims to determine how reading comprehension affects their ability to solve problems.

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2.7. Operationalization of Variables

Table 2

Operacionalización de variables

VARIABLES	DEFINITION	DIMENSION	INDICATOR	TECHNIQUES & INSTRUMENTS	ITEMS	TYPE
Reading Comprehension	A skill that allows students to obtain a textual explanation of what they read, infer implicit information, and thus develop critical thinking.	Literary Interpretation	- Level of data recognition - Level of unknown discovery - Level of recognition of mathematical operations - Application of methods for problem-solving	Technique: Pedagogical evaluation Instrument: Questionnaire Scale: Estimative	1 2,3 4,5	Quantitative
Mathematical Problem-Solving	A process based on analyzing concepts through reasoning and knowledge, stimulating skills that allow students to develop learning.	Process Reasoning Learning	- Application of logical procedures for problem-solving - Application of numerical language - Interpretation of the problem's solution	Technique: Pedagogical evaluation Instrument: Questionnaire Scale: Estimative	6 7 8	Quantitative

2.8. Technique and Instrument

The research employed the test technique with a questionnaire as the instrument. The questionnaire was designed with eight questions based on the indicators of each dimension of the variables—five questions on reading comprehension and three questions on problem-solving, each with its respective items.

Additionally, an estimative scale was developed to evaluate the process used by students in completing the questionnaire. This scale considered the criteria, which in this case were the indicators of each dimension, as shown in Table 3.

2.8.1. Validity

The validity of the instrument ensured that it effectively measured the characteristic it was intended to assess. In this research, content validity was used to measure domain knowledge.

Content validity was established through expert judgment, where a panel of three professors from Universidad Central del Ecuador participated. These experts had different professional backgrounds and were specialists in their respective fields:

- One expert in Language and Literature
- One expert in Mathematics
- One expert in Research and Language

To validate the content, the following formula was applied. If the result falls within a range of 0.5 to 1, the questionnaire items are considered valid:

Figure 1

Content Validity Formula

$$CVR = \frac{n_e - N/2}{N/2}$$

Note: Content Validity Formula

Where:

ne = Number of experts who consider an item essential or necessary for measurement.

N = Total number of experts participating in the evaluation.

The formula is applied to determine whether the questionnaire items are valid. If the result falls within the range of 0.5 to 1, the items are considered valid.

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Table 3

Estimative Scale for the Questionnaire

ESTIMATIVE SCALE			
School: Unidad Educativa Diez de Agosto **Subject: Mathematics** **Grade: Sixth** **Student's Name: _____** **Purpose: To evaluate the procedure used in solving the applied questionnaire.**			
Item No.	Criterion	YES (2)	NO (1)
1	Identifies the problem's data		
2	Recognizes the problem's unknown		
3	Identifies the mathematical operations		
4	Solves the mathematical problem using its methods		
5	Solves the problem by applying logical procedures		
6	Matches the columns using numerical language		
7	Completes the table using everyday and mathematical language		
8	Explains the answer obtained from the problem		
Total Columns			
TOTAL			

Table 4

Qualitative Scale

Level	Interval	Description
High	13–16 points	Masters the required learning
Medium	9–12 points	Achieves the required learning
Low	5–8 points	Is close to achieving the required learning
Insufficient	1–4 points	Does not achieve the required learning

Data Processing

Once the results were collected on the rating scale, statistical tables and graphs were created to process the data from the applied questionnaire. This allows the information to be organized in order to determine the influence of the variables, as seen in Table 7 and Figure 2.

Statistical Model

To determine the influence of reading comprehension on the resolution of mathematical problems, the Chi-square statistical modeling was used. This involves proposing an alternative hypothesis and a null hypothesis, and if the result is less than 0.05, the alternative hypothesis is accepted.

Ho = Null Hypothesis

Reading comprehension does not influence the resolution of mathematical problems.

Ha = Alternative Hypothesis

Reading comprehension influences the resolution of mathematical problems.

Table 5

Influence of reading comprehension on the resolution of mathematical problems.

Chi-square tests			
	Value	df	Asymptotic significance (two-sided)
Pearson Chi-square	21,750[a]	2	,000
Likelihood ratio	24,423	2	,000
Linear-by-linear assoc.	1,458	1	,227
Number of valid cases	36		

Analysis

According to the results in Table 5, the Chi-square analysis yielded a value of 0.000. This means that the result is less than 0.05; therefore, the alternative hypothesis is accepted, which states that reading comprehension influences the resolution of mathematical problems. Consequently, it can be inferred that, in order for a student to solve a problem, they must identify the data, recognize the unknown, deduce which mathematical operation to use, and apply the appropriate procedure to solve it. Thus, employing literal, inferential, and critical reading comprehension within the presented problem.

Ethical Aspects

The research process was carried out by the researchers, and the participants were sixth-grade students of General Basic Education from the “Unidad Educativa Diez de Agosto” in the city of Quito, who directly took part in the study. It was ensured that the individuals involved would not be subject to discrimination based on their origin, ethnic or cultural identity, or any limitations they may have. Additionally, no information regarding their religion, political beliefs, or other personal aspects could be demanded or used without the consent of the individual or their legal representatives.

Furthermore, participation was entirely voluntary. The participant or their legal representative could withdraw consent at any time. Likewise, if the participant/legal representative chose to withdraw, their decision was respected, and their opinions and perceptions collected were to be deleted and could not be used for any purpose. The benefits included access to the results of the research analysis. It is worth mentioning that the study posed no risk. Confidentiality of the collected information was ensured by anonymizing personal data. Once the instrument was applied

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to the participants, data tabulation followed, after which a Zoom meeting was held with the legal representatives and students to present the research findings.

It is emphasized that no names of the participants were used in the study to maintain anonymity. Identification was done using codes created for each participant, which were based on the initials of the first names and the first two initials of the last names. The group of researchers was responsible for handling the results and study documents. Finally, it is important to note that the research complies with current national and international laws and regulations.

Results

Table 6

Validez del cuestionario

	Correspondence between objectives, variables, indicators, and items								**Technical quality and representativeness**								**Language and clarity**							
Expert	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1 MSc. Dayana Chicaiza	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2 MSc. Fernando Garcés	4	4	4	4	4	4	4	4	4	3	4	3	4	3	4	4	4	4	4	4	4	4	4	4
3 MSc. Francisco Rojas	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
#Judges who rated 3	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
#Judges who rated 4	3	3	3	3	3	3	3	3	3	2	3	2	3	2	3	3	3	3	3	3	3	3	3	3
ne	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CVR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

As Borromeo (2023) mentions, “The result of the content validity operation will be an index ranging between -1 and 1. In general, an item can be accepted if its value is greater than zero and rejected if it is less than zero” (p.18). In this sense, it can be determined that the questionnaire is valid for application since the result is 1.

Table 7

Results of the Applied Questionnaire

Criteria	Identifies the problem data		Recognizes the problem's unknown		Identifies the mathematical operations		Solves the mathematical problem using their methods		Solves the problem by applying logical procedures		Matches the columns using numerical language		Completes the chart using everyday and mathematical language		Explains the answer obtained from the problem		TOTAL
Number of Students	Si	No	Si	No	Si	No	Si	No	Si	No	Si	No	Si	No	Si	No	
AMGH	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
AMOL	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	16
APGD	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
APML	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
ARFP	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
BCEF	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
BMMR	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
CESM	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
CGGR	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
CTSE	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
DLMR	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
DTAT	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
ERPF	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
FRGB	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
IGMT	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
JMPI	2	0	2	0	0	1	0	1	0	1	0	1	0	1	0	1	10
JRGP	2	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	9
LSRC	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
LSTV	2	0	2	0	0	1	0	1	0	1	0	1	0	1	0	1	10
LTMF	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	8
MAVS	2	0	2	0	0	1	0	1	0	1	0	1	0	1	0	1	10
MGPR	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	16
MHLS	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
NFRG	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
NJCP	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	8
NLSA	2	0	2	0	2	0	2	0	2	0	2	0	2	0	0	1	15
RAFT	2	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	9
RTPC	2	0	2	0	2	0	2	0	2	0	0	1	0	1	0	1	13

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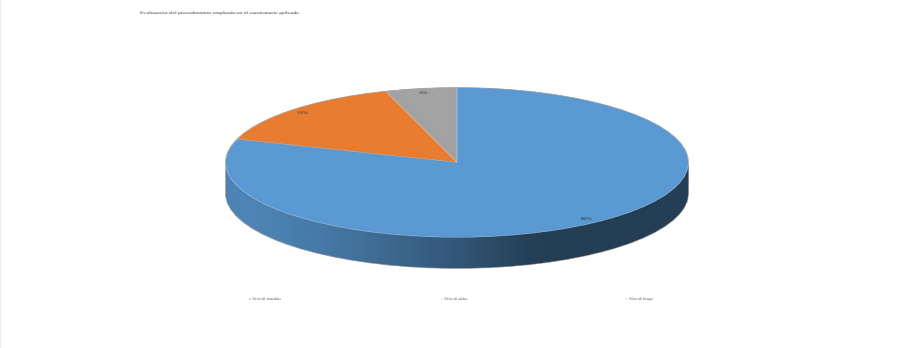
SAPT	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
SMLA	2	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	9
SPTA	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
SRTD	2	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	9
TMMF	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
VDPS	2	0	2	0	0	1	2	0	0	1	0	1	0	1	0	1	11
VGRD	2	0	2	0	0	1	2	0	2	0	0	1	0	1	0	1	12
VHYP	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	16
Total, de las columnas	34	2	30	6	5	31	27	9	19	17	4	32	4	32	3	33	

Figure 2

Evaluation of the Questionnaire Used



Note: Evaluation of the questionnaire used.

Interpretation of Results

According to the results obtained in Table 7 and Figure 2, based on the rating scale, 80% of the population achieved an intermediate level, which corresponds to a range of 9 to 12 points out of a total of 16. This means that students have acquired the required learning outcomes and are able to identify the data, recognize the problem's unknown, identify the mathematical operations, solve problems using their own methods, as well as employ both everyday and mathematical language, and finally, relate numerical language.

On the other hand, 15% reached a high level, corresponding to a range between 13 and 16 points, which indicates that these students have mastered the required learning outcomes and are capable of explaining and solving mathematical problems.

Lastly, 5% of the students are at a low level, which represents a range of 5 to 8 points. This indicates they are close to achieving the required learning outcomes and can only perform the following processes: identify the problem's data, identify the mathematical operations, recognize the problem's unknown, and solve the problem using their own methods.

Discussion of Results

The research results align with what Condori and Sosa (2019) mention in their study titled "Reading Comprehension and Its Relationship with the Resolution of Mathematical Problems", which addressed the relationship between the level of reading comprehension and the resolution of mathematical problems among sixth-grade students in primary schools under the Local Educational Management Unit (UGEL) of Puno in 2015.

In the same vein, Blanco and Mancilla (2021), in their research "Reading Comprehension in the Interpretation of Mathematical Problems", concur with the present study that reading comprehension and the translation of textual language into mathematical language enhance students' problem-solving and reasoning skills.

Conclusions

It was concluded that reading comprehension and the resolution of mathematical problems are closely related, as mathematical problems require reading comprehension to understand what is being asked in the exercise, such as identifying relevant data and discarding irrelevant ones. It also allows students to find data or unknowns through prior reading and understanding. This process helps detect errors in the interpretation of the problem, and good reading comprehension enables students to clearly and coherently explain the process and their answers in solving mathematical exercises, which is essential in learning and mathematical assessment.

Moreover, the data obtained reflect that students develop reading comprehension to successfully complete the proposed mathematical exercises. Therefore, children are prepared to explain and solve mathematical problems. In this sense, both variables should be taught in a balanced way so that students understand what they are solving and achieve meaningful learning. Finally, the results will serve as a foundation for future scientific research.

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