



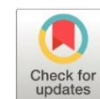


## Gestión educativa: importancia de la estrategia lúdica para evaluar el proceso enseñanza - aprendizaje de los estudiantes de educación general básica elemental en la asignatura de matemática

*Educational management: importance of the playful strategy to evaluate the teaching-learning process of elementary general education students in the subject of mathematics*

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**Palabras claves:**

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## Resumen

**Introducción.** En el ámbito educativo, las innovaciones promueven el desarrollo de procesos cognitivos, utilizando estrategias para combinar experiencia y práctica, así como métodos no disciplinarios que promueven la reflexión, la argumentación y la autonomía; en este contexto, el aprendizaje de las matemáticas beneficia en la adquisición de conocimientos, la comprensión e interacción de contenidos conceptuales, orientados al razonamiento lógicos y procedimientos analíticos. **Objetivo.** Investigar la incidencia de la lúdica para la enseñanza de Matemática. **Metodología.** Se empleó el método de observación participativa a través de una ficha de observación que permitió profundizar en el estudio, posteriormente facilitó la deducción de las consecuencias, la verificación y comprobación de la hipótesis entre dos muestras independientes aplicando la Prueba U de Mann-Whitney. **Resultados.** El Ministerio de Educación, en coordinación con instituciones regionales y locales, fomenta la participación de estudiantes, docentes, padres de familia y la comunidad educativa con el objetivo de crear oportunidades para el uso de conocimientos importantes basados en criterios de pedagogía crítica y educar a los estudiantes, con una perspectiva transformadora, la gestión educativa a través de la lúdica aporta en la evaluación del proceso enseñanza aprendizaje de la asignatura de Matemática partiendo de la integración de contenidos desde una perspectiva constructivista y cognitivista. **Conclusión.** En el sistema educativo, los permanentes cambios en el campo de las ciencias, el desarrollo de la tecnología y la necesidad de lograr una educación integral que promueva la igualdad y la equidad requieren que los docentes innoven en su práctica utilizando recursos, estrategias, materiales o actividades para optimizar el proceso de aprendizaje de las matemáticas; por lo tanto, el uso de juegos educativos beneficia en el mejoramiento de las habilidades de razonamiento, el pensamiento lógico, la participación activa y el aprendizaje colaborativo. **Área de la ciencia general:** Pedagogía. **Área de la ciencia específica:** Metodología

## Abstract

**Introduction.** In the educational field, innovations promote the development of cognitive processes, using strategies to combine experience and practice, as well as non-disciplinary methods that

development,  
social skills,  
decision making.

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promote reflection, argumentation, and autonomy; In this context, learning mathematics benefits the acquisition of knowledge, understanding and interaction of conceptual content, oriented to logical reasoning and analytical procedures. objective. Investigate the incidence of play for teaching Mathematics. Methodology. The participatory observation method was used through an observation sheet that allowed us to delve deeper into the study, subsequently facilitating the deduction of the consequences, verification, and verification of the hypothesis between two independent experts by applying the Mann-Whitney U Test. Results. The Ministry of Education, in coordination with regional and local institutions, encourages the participation of students, teachers, parents and the educational community with the objective of creating opportunities for the use of important knowledge based on critical pedagogy criteria and educating students. students, with a transformative perspective, educational management through play contributes to the evaluation of the teaching-learning process of the subject of Mathematics based on the integration of content from a constructivist and cognitivist perspective. Conclusion. In the educational system, the permanent changes in the field of science, the development of technology and the need to achieve a comprehensive education that promotes equality and equity require teachers to innovate in their practice using resources, strategies, materials, or activities to optimize the mathematics learning process; Therefore, the use of educational games benefits the improvement of reasoning skills, logical thinking, active participation, and collaborative learning.

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## Introduction

The governing body in the Ecuadorian educational system is the Ministry of Education, which applies efficiency policies to strengthen the learning process through updating study plans aimed at improving quality standards. For Guashca & Alvarado(2023), in this context bBasically, the objective of educational administration is to improve the performance of schools and educational institutions using various technologies, tools and knowledge, bringing together the various elements that make up the institutional reality (students, teachers and communities) to share information, provide feedback and overcome barriers. such as dropout or poor student performance.

School management attempts to view education as an organized and systematic whole, including all activities, tools or programs designed to improve school performance.

According to Farinango (2023), facing the challenges of the knowledge society, Education faces innovations in science, technology and productivity, for this reason, teachers must rethink their practices, guide students towards significant knowledge and develop the necessary skills; Therefore, student learning requires a series of activities that promote the use of attractive strategies that help reconstruct content through evaluation.

In this aspect Martinez (2023) In daily work, students show difficulties with critical thinking, they do not actively participate, short-term memory of knowledge prevails; the use of repeated methods does not contribute to the development of skills. It is significant to state that the limited use of game strategies prevents progress in mathematical language, which affects reasoning, mental processes, intellectual abilities and autonomy in terms of self-realization.

In summary, the final result of this work is the implementation of a didactic strategy to stimulate mathematical education with the objective of cultivating potential talents with a humanistic, critical and creative spirit. In addition, it will allow you to make decisions to solve problems, difficulties or conflicts in a variety of environments, strengthening learning based on the concepts of number, space and time aimed at the development of reasoning skills.

In this section, through different conceptualizations, the importance of the practice of values in the family for behavioral development of the students.

#### *Ecuador, curricular innovation*

In Ecuador, curricular innovation is part of an educational project that promotes development and socialization with a focus on constructivist learning; De la Cruz & Morales (2024) They state, the limited mathematics education, the lack of knowledge about the management of recreational strategies and the inadequate use of resources hinder the participation, performance and academic success of the students.

Continuing, the criteria set forth by Vizhco & Guillén are presented. (2023), the lack of use of strategies or techniques leads to cognitive development through experience-based learning, however, it does not contribute to reasoning, the interconnection of information, mathematical analysis, which prevents the application of the acquired learning, leading to passivity resulting in poor academic performance.

In the province of Tungurahua, mathematics teachers receive little training or updating to strengthen the implementation of playful strategies, resulting in a traditional pedagogy that affects the development of skills, dialogue and learning.

Teachers use a theoretically and conceptually supported pedagogy that encourages repetition to consolidate content, which limits reasoning, argumentation and communication skills, leading to poor academic performance, increasing dropouts and school dropouts.

The Tamboloma Bilingual Intercultural Education Unit in the Pílahüin parish, province of Tungurahua, is characterized by being a fiscal institution, with bilingual jurisdiction, it integrates 28 teachers and 554 students.

In the pedagogical context, it has been observed that various mathematics teachers are interested in the implementation of game strategies, but a smaller percentage does not use play to exchange experiences and information, so it is necessary to strengthen their knowledge to improve educational competence.

Another factor is the obsolescence of study plans and programs, which has reduced the application of didactic and methodological strategies that lead to collaborative learning, logical thinking, autonomy, creativity and initiative. Furthermore, the lack of academic preparation, of commitment to carry out pedagogical work, undermines the scope of a productive and equitable education.

## Results

For Imacaña(2018), in carrying out this work the survey was applied with the purpose of obtaining numerical information related to six teachers of Basic Elementary General Education, in reference to the use of the playful strategy for teaching Mathematics; The instrument was oriented towards the discernment of relevant aspects that strengthened knowledge and facilitated the qualitative and quantitative analysis of the proposed topic.

In the study, the participatory observation method was applied, where the researcher collected information directly through the form.(Imacaña, 2018). The inductive procedure was applied by beginning to visualize reality, establishing generalities, from particular cases to achieve general knowledge, relating the causes that affect the application of playful strategies aimed at learning Mathematics.

The hypothetical method was used to observe the use of playful strategies for learning Mathematics, giving rise to the creation of the hypothesis to deduce the consequences and subsequently proceed with verification and verification.

According to Zambrano & Navarrete(2023), in the research approaches, the qualitative approach was applied when it was used in the search for knowledge based on scientific advances that lead to the strengthening of knowledge related to recreational strategies that deepen arguments from various authors to develop the theoretical framework; while the quantitative approach allowed the collection of statistical data from a realistic perspective



through observation, using the Mann-Whitney U test in the comparison between two independent samples.

The research modality, being part of the educational area, was field based, relying on the observation carried out on students in the 2nd, 3rd and 4th grade of Basic Elementary General Education; The survey was applied to six teachers, which facilitated the collection of information directly to describe the problem, delimitation, construction of instruments, processing and coding to establish conclusions; In addition, it was supported by bibliographical documentary sources.

In the work carried out, the Mann-Whitney U Test is applied for two independent samples; The observation technique was used to collect information from 80 students; The items in their systematic structure made it possible to delimit the study area, record, analyze and interpret the data in order to draw conclusions; The survey was administered to six teachers from which precise estimates were obtained within a five percent margin of error; It is emphasized that the questions were developed considering the objectives; The sheet deepened the knowledge of the playful strategy, improving the learning of Mathematics.

The questionnaire was prepared with ten clearly worded questions with the purpose of obtaining exact answers to reduce ambiguities in interpretation; The Likert scale allowed measuring the behavior of the variables, discovering different levels of opinion; It was numbered from one to four to define the points of view, maintain logical continuity; through assessment: always (4), frequently (3), rarely (2), never (1).

The population was made up of 80 students and 6 teachers of Basic Elementary General Education.

**Table 1**

*Population*

Units of Analysis	Frequency	Percentage %
Second grade students	24	28%
Third grade students	3. 4	39%
Fourth grade students	22	26%
Teachers	6	7%
Total	86	100%

**Note:** This table shows the population under study

A sample was not determined because the observation sheet was applied to all second, third and fourth grade students, along with the questionnaire to collect numerical data from Elementary General Education teachers.

It is determined that the use of playful strategies contributes to the students' learning process by becoming a means to reinforce and enhance concepts, procedures, attitudes, capacities, skills, basic abilities in order to improve self-awareness, group interaction in the area of Mathematics.

The insufficient use of a playful strategy harms reflection, problem solving, creative thinking, the concentration that the process implies in the construction of students' knowledge, its poor integration transcends into the poor mathematical logical discernment, the coordination of relationships, interaction with the environment and the consolidation of mental notions.

It is concluded that recreational games favor the learning of Mathematics, especially in strengthening understanding, assimilation, language development, memory and self-esteem, generating a space for self-regulation, assuming roles related to cognitive functions, through the relationship of past experiences with future ones to acquire significant learning.

- Using Cronbach's Alpha, the reliability of the numerical data collection instrument was measured in order to establish the level of internal consistency.
- From the theoretical dimension, validity assumes that the items are correlated.
- The closer the alpha value is equal to 1, the greater the internal stability; reliability was carried out with the data of each sample.

#### *Interpretation of responses*

The choice of a playful strategy to invigorate instruction in basic General Education students aims to increase study skills to solve complex problems.

In addition, it contributes to the preparation of mental operations, with the student being prepared to analyze, compare and generalize, in this way making reasoned and timely judgments. Due to the above, it is still considered that teachers, by benefiting from playful strategies, reduce repetition and the use of the notebook and the blackboard.

*Statistical test of the proposal. Reliability analysis.*

**Table 2***Case processing summary*

		N	%
Cases	Valid	86	100.00
	Excluded	0	0
	Total	86	100.0

to. List elimination based on all variables in the procedure.

**Note:** This table shows the case processing summary.

**Table 3***Statistical reliability*

Reliability statistics		
Cronbach's alpha	Cronbach's alpha based on the number of elements typed elements	
.986	.987	10

**Note:** This table shows the Statistical Reliability

According to Frías Navarro(2022):

- The alpha value is 0.986 close to 1; having greater internal consistency.
- In terms of statistical reliability, an acceptable Cronbach's alpha value of 0.98 has been obtained.
- That is, the items are interrelated; under the criteria of George & Mallery(2003).
- If in the evaluation of values, the Cronbach's alpha coefficient is maintained with an alpha coefficient greater than 0.9, it is excellent.

*Statistical test hypothesis planning*

**Null Hypothesis:** the playful strategy does not satisfactorily affect the evaluation of the teaching-learning process of the subject of mathematics in basic elementary general education.

**Alternative hypothesis:** the playful strategy satisfactorily affects the evaluation of the teaching-learning process of the subject of mathematics in basic elementary general education.

The mathematical model presents two response alternatives that must be tested: the null hypothesis will be accepted when the statistical calculation projects that the observed and expected data are similar; If they are not equal, the alternative would be accepted.



H0:  $O = E$  (Null Hypothesis)

H1:  $O \neq E$  (Alternative Hypothesis)

For the statistical calculation, the following values were applied:

- $\alpha = 0.05$  = Significance level (defined as the probability of wrongly rejecting the null hypothesis)
- 95% Reliability level

To carry out the Mann-Whitney U Test, an analysis is established between the students who worked with playful strategies, and those who did not, the data obtained is detailed:

**Table 4**

*Descriptive statistical data*

	N	Half	Typical deviation	Minimum	Maximum	Percentiles		
						25	50 (Medium)	75
In the learning process through playful strategies, the child exchanges knowledge and experiences.	40	3.75	.43	3.00	4.00	3.25	4.00	4.00
Through recreational activities the student strengthens communication, cooperation and respect among classmates.	40	3.70	.46	3.00	4.00	3.00	4.00	4.00
The student through play and recreation develops attention, active listening and assimilation.	40	3.62	.49	3.00	4.00	3.00	4.00	4.00
Through play, the student develops experiences, shares knowledge and expresses emotions.	40	3.95	.22	3.00	4.00	4.00	4.00	4.00

**Table 4***Descriptive statistical data (continuation)*

	N	Half	Deviation typical	Minimu m	Maximu m	Percentiles		
						25	50 (Medium)	75
The child demonstrates curiosity, confidence, and actively participates in the teaching-learning process.	40	3.90	.30	3.00	4.00	4.00	4.00	4.00
The child understands, elaborates, recognizes and identifies mathematical concepts and properties.	40	3.27	.640	2.00	4.00	3.00	3.00	4.00
The student demonstrates attention, concentration and pleasure in learning Mathematics	40	3.25	.43	3.00	4.00	3.00	3.00	3.75
When the student plays and has fun, he thinks, questions and solves simple problems.	40	3.6250	.49	3.00	4.00	3.00	4.00	4.00
Through play, the student interacts, understands and makes creative decisions.	40	3.5500	.fifty	3.00	4.00	3.00	4.00	4.00
Through play the child is motivated, explores, discovers, and reflects.	40	3.7750	.42	3.00	4.00	4.00	4.00	4.00

**Note:** This table shows through the SPSS Program: Descriptive Statistical Data

To establish the statistical data, 50% of the population has been selected using the SPSS Statistical Program. That is, 40 students. Obtaining a standard deviation less than 0.5 in almost all items.

The exception is maintained in item 6. The child understands, elaborates, recognizes and identifies Mathematical concepts and properties, 640.

**Table 5***Mann-Whitney Test: Ranges*

Ranks	Item 10. Through N play the child is motivated, explores, discovers, and reflects	Average range	Sum of ranks
Item 4. Through play, the student develops experiences, shares knowledge and expresses emotions.	3.00 9 4.00 31 Total 40	17.06 21.50	153.50 666.50

**Note:** This table shows using the SPSS Program: Mann-Whitney Test: Ranges.

**Table 6***Mann-Whitney test: Contrast*

Contrast statistics	Item 4. Through play, the student develops experiences, shares knowledge and expresses emotions.
Mann-Whitney U	108,500
Wilcoxon W	153,500
Z	-2,659
Asymptotic sig. (bilateral)	.008
Exact sig. [2*(unilateral sig.)]	.321b

to. Grouping variable: Item 10. Through play the child is motivated, explores, discovers, and reflects.

b. Not corrected for ties.

**Note:** This table shows using the SPSS Program: Mann-Whitney Test: Contrast.

With a confidence level of 95% and given that the p value of 0.008 corresponds to a probability less than 0.05:

It is accepted  $H_a$ : The playful strategy satisfactorily affects the evaluation of the teaching-learning process of the subject of Mathematics in Elementary Basic General Education.

$H_0$  is rejected: The playful strategy does not satisfactorily affect the evaluation of the teaching-learning process of the subject of Mathematics in Elementary Basic General Education.

### *Playful strategies applicable in elementary general education*

The proposed games are characterized by the scope of general competencies of understanding the notions, properties, procedures, to achieve logical thinking that is visualized in the formulation, representation, observation and resolution of problems.

#### *Game No. 1. Logic and fun*

The game is part of the content of the algebra and functions block of second, third and fourth grade of primary general education and consists of using surrounding objects to form sets, the purpose of which is to graphically establish the correspondence. among its elements (Sobrino & Silva, 2023).

The formation of sets is characterized by strengthening logical-mathematical thinking and can be used for analysis, ordering and classification to promote cognitive skills. In addition, the games will help in knowledge about shapes, colors and textures, creating a dynamic learning environment that encourages participation.

*Goal.* Its goal is to connect mathematical knowledge, stimulate curiosity and develop exploration skills.

Groups of four students are formed:

- The work group must choose a partner to lead the game.
- The leader of the first group approaches, writes a number on the board and asks the participating groups to form their groups according to their needs.
- The teacher acts as an advisor to ensure that the proposed activities are carried out.
- Groups that do not listen to the instructions will have to do the task over and over again until they follow the instructions.
- In this way, care, understanding and respect are promoted in the educational field.

*Material:* logic block, marker, liquid chalk.

Logic games emphasize developing logical-mathematical thinking skills to strengthen mental structures. When applied to mathematics learning, it contributes to the practice of content. This is also a strategy that helps with self-esteem, spirituality, resistance and resilience.

#### *Game No. 2. Mental development, differentiation and creativity*

Mental development, differentiation favors the knowledge of the algebra block that includes functions of basic elementary education, whose purpose is to build patterns of

figures relating them to addition, subtraction and multiplication, to develop logical mathematical thinking (Pincheira & Alsina, 2021).

For Barbosa et al.(2017), the use of cards contributes to motivation, favors the progress of logical mathematical notions, impacts the knowledge of mathematical contents such as serie, addition, subtraction; Furthermore, color classification benefits reasoning; It is determined that playful strategies collaborate in children's development and learning.

*Goal.*Enhance numerical knowledge through differentiation and creativity games. minutes

Select the image or diagram that corresponds to the planned mathematics learning content. Landscapes and paintings should not be in color, preferably in black and white. Work with your students to decide the colors they will use in the activity.

Each color must be determined by an arithmetic operation such as addition or subtraction. Teachers should explain the landscape to students to develop children's attention and understanding.

We need to perform math operations and then start coloring. After meeting the specifications, use base material 10 to check and verify your answer. This game is used in grades 2, 3 and 4 of primary school, but its complexity increases depending on the educational level.

Material, sheet or drawing, color, pencil

The playful strategies that make up the game provide pedagogical support that promotes the recognition of logical rules for understanding mathematical tasks.

*Game No. 3. Mathematical hopscotch, recreation, calculation and fun*

The specific game: mathematical hopscotch, calculation and fun, belongs to the block called algebra and functions of the second, third, fourth grade of Basic Elementary General Education. Its purpose is to concretely integrate the concept of number to recognize situations in its environment in which present problems that require the formulation of simple mathematical expressions, to solve them individually or in groups, using the algorithms of addition, subtraction, multiplication and exact division (Aguilar, 2018).

The mathematical hopscotch game facilitates teaching and learning, supports the development of cognitive skills, strengthens the recognition of geometric figures; It also promotes fun and writing numbers.



**Aim.** Apply the recreational game of hopscotch for the development of logical mathematical notions, through the use of numerical sequences, which improves cooperative learning, argumentation and interpretation.

**Process.** Locate the appropriate space to draw hopscotch, which must be free of objects that could cause physical damage; Using chalk, proceed to draw 10 squares on the floor; Write the numbers according to the level of study, which can be from one to ten.

At the beginning of the game, the student throws an object, token or coin, standing behind the first square.

In the box where the object, token or coin falls, the student must not step. The student will start the route by jumping with one foot until finishing. When the stone falls in the wrong box, the next child will continue.

**Material.** Base 10 chalk cards with calculation operations colored pencil chips.

*Conclusion.* Lopez et al.(2019), the application of the hopscotch game strengthens the development of cognitive functions that guide behavior, stimulate critical sense, and the ability to plan reasoning actions

#### *Game No. 4. Fun in learning addition*

Game N 4 is called "Fun Learning Addition," encompasses algebraic and functional blocks and aims to explain and create numerical patterns related to addition and develop the thinking of mathematical logicians.

In general primary education, students' learning of mathematics forms the basis for the development of their thinking skills. The use of teaching strategies and games promotes knowledge of the addition and subtraction processes (Imacaña, 2018).

**Goal.** Improve your math learning by solving minute thinking problems.

The teacher asks the students to complete one or more exercises. For example; Margarita has 25 pears and Daniela 18. How many pears do they have in total?; Children should use base 10 to personify operations.

Two working groups are then formed. One is 25 small cubes. The other is 18 dice. Once the total has been reached, it must be exchanged for a bar.

**Material.** Wooden pictures to assemble, pencil.

The game stimulates students' mental agility and develops mathematical thinking.

#### *Game No. 5. Exercise, construction and participation*

Numbers relating them to subtraction.

This game helps train the intellect to work with numbers, promote knowledge, reflect and build relationships with subtraction lessons.

Goal. Learn the meaning of subtraction and solve math problems using several steps.

Due to the complexity of teaching subtraction to lower level children, games are a necessary element of the lesson and the following process should be followed.

Give students word problems involving subtraction. You can write it on the board or read it aloud as a poem. For example:

There are 8 apples in the basket and Juan ate 3. How many apples are left?

Use pictures on the board or on paper to illustrate the problem.

Draw 5 apples, color them red, ask students to count them.

Explain that Juan ate 3 apples and cross out. Ask how many apples are left?

Object problems can be explained:

Place 8 apples on the table, ask children to count.

Then select 3 apples.

Explain that Juan ate three apples.

Ask students to count the number of apples left on their desks.

Write the suggested problem in numbers and place it on the board:  $8 - 3 = 5$ .

Briefly explain the problem verbally, remembering that children need to participate.

Material. Board, liquid chalk, spreadsheet, apple

If your students have difficulty learning basic operations, it is significant to use objects to develop their attention.

Depending on the complexity of the exercises, use boards and worksheets to improve your logical-mathematical thinking and strengthen your mental structure.

Goal. Improve your math learning to solve thinking problems.

Games are essential tools to establish proposals that enrich educational work; In addition, they stimulate students' mental agility and develop mathematical thinking (Solís et al., 2023).

*Game No. 6. Playing and learning with geometric figures*

The use of a game called: Playing and learning with geometric figures contributes to the development of units 2 and 3.

Covers algebra and function blocks.

The goal is to develop logical mathematical thinking by creating patterns of numbers and relating them to subtraction.

This game helps train the intellect to work with numbers, promote knowledge, reflect and build relationships with subtraction lessons.

Goal. Learn the meaning of subtraction and differential subtraction and solve math problems using several steps.

Due to the complexity of teaching subtraction to lower level children, games are a necessary element of the lesson and the following process should be followed.

Give students word problems involving subtraction.

You can write it on the board or read it aloud as a poem. For example, There are 8 apples in the basket and Juan ate 3.

How many apples are left?

Use pictures on the board or on paper to illustrate the problem.

Draw 5 apples, color them red, have students count them, explain that John ate 3, and cross out or cross out the 3 apples.

Are you asking how many apples are left?

Object problems can be explained.

Place 8 apples on the table, ask children to count, and then select 3 apples. Explain that Juan ate three apples.

Ask students to count the number of apples left on their desks.

Write the suggested problem in numbers and place it on the board:  $8 - 3 = 5$ .

Briefly explain the problem verbally, remembering that children need to participate.

Material. Liquid chalk, spreadsheet.

If your students have difficulty learning basic operations, it is important to use objects to develop their attention.

Depending on the complexity of the exercises, you can use boards and worksheets to improve your logical-mathematical thinking and strengthen your mental structure.

Goal. Improve your math learning to solve thinking problems.

The teacher asks the students to complete one or more exercises. For example:

Margarita has 25 pears and Daniela has 18 pears.

How many pears do they have in total?

Children should use base 10 to personify operations.

Two working groups are then formed.

One is 25 small cubes.

The other is 18 dice.

Once the total has been reached, it must be exchanged for a bar.

Material. Wooden pictures to assemble, pencil.

The game stimulates students' mental agility and develops mathematical thinking.

#### *Game No. 7. Learning units tens hundreds*

Learning units of tens and hundreds, located in the algebra and functions block, with the aim of recognizing the positional value of natural numbers of up to three figures based on composition and decomposition, with symbolic representation through grouping of objects.

As an update and reinforcement of the curriculum, a tool to guide learning, enhance interaction with people in the environment, intellectual games promote the development of skills.

Aim. Compare between different numerical quantities using different elements that contribute to the formation of base 10 knowledge, to reinforce both understanding.

Progress. Students must understand and distinguish between units of tens and hundreds:

Convert the counters into squares by writing 1 for ones, 10 for tens, and 100 for hundreds on each number.

Using other materials like wood or cardboard, create drawings that you want students to decompose. Students should color as many squares in ones, tens, and hundreds as possible.

Material. Fomix, paper, cardboard box, highlighter.

By developing specific experiences, teachers support students in the recognition of numbers in tens and hundreds through the use of materials that promote abstraction, representation, and logical-mathematical thinking.

Various elements can be used such as beans, tapas, dice games, etc.

#### *Game No. 8. Fun in number association*

The game associated with the pleasure of connecting numbers is applied to learn the content of lesson number 2, located in the algebra and functions block, with the objective of using objects from the environment to form sets, graphically establishing the correspondence between said objects (Imacaña, 2018).

Mathematics is the subject that students have the most difficulty with, however, through fun games, teachers can develop interest and motivation in learning with numbers.

Aim. Develop identified link skills.

Progress. This is a hot air balloon game where you have to connect the basket to the balloon, it can be applied in different ways, the numbering from 1 to 10 will be used, follow these steps:

Using inflated balloons, place the numbers 1 to 9 on each card, using your fingers to connect the numbers indicating order and grouping.

To place in the basket, observe the number of fingers on your hand joining it with the balloons.

Material. The balloons, balls or balls with dots represent 1, 2 and 3.

Conclusion. Mathematics is an essential part of a student's mental development, because it is found in various daily activities, fun strategies such as games are necessary from an early age to reinforce their creativity (Imacaña, 2018).

#### *Game No. 9. Multiplying with joy and fun*



In game number 9 under the name: Fun multiplication is used to teach content related to Lessons 3 and 4, located in the Algebra and Functions block, to explain patterns related to multiplication and develop mathematical logical thinking (Imacaña, 2018).

Taking as a principle the teaching of Mathematics, the usefulness of numerical knowledge for solving everyday problems; The application of entertaining games that stimulate students' understanding is considered a top priority.

**Aim.** Determine the meaning of multiplication through reflection and mental reasoning to actively engage students.

**Progress.** In this process, the goal is to provide students with common problem situations in which multiplication is integrated.

Print the worksheet and have students work as long as they know the numbers; explain that multiplication expands with addition.

Leave the board in use and then remove it, using physical and visual supports.

If there are 3 containers, with 12 colors in each of the 4 colors, you need to show students the quantity so they can think about learning math.

**Material.** Multiplication Table, Chalkboard Print, Worksheet, Color

**Conclusion.** Multiplication tables are considered part of mathematical skills that must be learned by heart, their knowledge helps to solve problems easily and teachers must motivate students to acquire reasoning and logical thinking skills.

#### *Game No. 10. Mathematical labyrinth*

The game is defined as a mathematical labyrinth, serving to teach the content of lesson 1 corresponding to the algebra block, the objective is to determine the elements of the initial and final set, from the sum or multiple of a number, to develop thinking mathematical logic (Imacaña, 2018).

Math games or exercises are fun strategies designed to reinforce students' knowledge of creative, reasoning-based problem solving.

**Aim.** Promote the use of playful strategies for solving problems through mental calculation, having a sense of responsibility, confidence and security when debating.

**Progress.** Resolve all activities that arise.

Once you have finished solving, start from the arrow that appears marked on the maze, following the solution numbers in order until you reach the exit.

Material. Print the maze, color, marker.

Conclusion. The use of mazes has potential for teaching mathematics because it facilitates access to different knowledge for learning with the purpose of reinforcing attention, developing orientation and geometric reasoning (Freire et al., 2019).

### Discussion

General basic education is considered training for the future, a criterion linked to the meaning of education, awareness, constitution and orientation for the development of identity (González et al., 2021). Therefore, the system contemplates ten levels, starting from the first grade to the tenth, after which they will enter secondary school.

During the course of their studies, students acquire competencies, potential, skills and abilities to make appropriate decisions and face environmental problems with autonomy, self-criticism or self-assessment. Velastegui et al.(2024), express to achieve the educational objectives established in the school programs, teachers plan, organize, manage and implement methodologies in the learning process that benefit training and experience.

The teacher is currently obliged to know and promote teaching in accordance with the objectives of basic general education, and the teacher must be open to change, it being necessary to constantly use the methods and content to respond to the most logical and methodical mathematical learning of his students.

### *Learning strategies*

According to Gil et al.(2018), They assume that strategies arise due to teaching needs, they are integrated through techniques, activities, means or resources planned in relation to knowledge, skills, abilities and intelligence.

According to the researcher, the cyclical planning of content activities with feedback and evaluation guarantees the probability of success in the teaching-learning process, promotes research and problem-solving skills in the mathematical field.

According to Quiroz & Delgado (2021), From a pedagogical perspective, learning strategies facilitate the development of cognitive or metacognitive skills during the teaching-learning process; Therefore, from the author's perspective, it has been pointed out that strategies must be integrated through various components: activities, methods, means or resources, which are planned in relation to the needs of the students according to their possibilities, abilities and limitations.

### Conclusion

- Educators do not apply playful strategies in the teaching-learning process of Mathematics, therefore, monotonous classes harm the assimilation of theoretical and practical knowledge, which harms critical thinking, logical reasoning and the development of cognitive skills. .
- Since teachers frequently use the playful strategy; It is perceived that they are unaware of its importance and benefits in learning mathematics, that is, it is not used to reinforce mathematical knowledge. For the reasons mentioned, it is deduced that they do not have the theoretical foundation or support, therefore the quality decreases. of Education; Furthermore, the disinterest of several teachers in knowledge innovation has conditioned the systematization of teaching based on traditional curricular content, maintaining repetitive classes that increase memorization.

### Conflict of interests

The authors declare that there is no conflict of interest in relation to the article presented.

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