

The psychological approach to the teaching and learning of mathematics in early childhood education

El enfoque psicológico para la enseñanza y aprendizaje de las matemáticas en los niños de educación primaria

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ABSTRACT

The present work aims to determine the importance that teachers give to the precepts of psychological approaches in the process of teaching and learning Mathematics in children of primary education, of a Public Educational Institution in the city of Guayaquil, province of Guayas, Ecuador. The methodology is descriptive, with a field design. The population under study was made up of twenty-five teachers (25) of the primary education stage. The information was collected through an interview and through a Likert scale questionnaire. The instrument was validated through expert judgment and reliability through the Alpha Cronbach coefficient. A quantitative analysis of the data was performed using descriptive statistics. Results: regarding the starting diagnosis; 36% always indicated; on the realization of the planning based on the postulates of the theories that exist on the teaching-learning process; 44% said always; Regarding activities for the strategic development of logical or operational thinking in the child, 60% always said; Regarding the use of recreational activities as a strategy for teaching and learning mathematics in primary school children, 80% always stated that psychological approaches favor the teaching and learning of mathematics in primary school children in a world in constant transformation, 0% always responded. In short, it is evident that the intention of the study of Mathematics from childhood must be aimed at providing the student with a positive vision of this science, in such a way that they acquire the skills of abstraction, logic and critical thinking, with the necessary support of psychological approaches for the adequate teaching and learning of mathematics in children of primary education.

Palabras clave: Mathematics education, primary education, psychological approach.

RESUMEN

El presente trabajo pretende determinar la importancia que otorgan los docentes a los preceptos de los enfoques psicológicos en el proceso de enseñanza y aprendizaje de las Matemáticas en los niños de educación primaria, de una Institución Educativa Pública de la ciudad de Guayaquil, provincia del Guayas, Ecuador. La metodología es de tipo descriptiva, con un diseño de campo. La población en estudio estuvo conformada veinticinco docentes (25) de la etapa de educación primaria. La información se recabó mediante una entrevista y a través de un cuestionario tipo escala Likert. El instrumento fue validado a través del juicio de expertos y la confiabilidad a través del coeficiente de Alpha Cronbach. Se realizó un análisis cuantitativo a los datos utilizando la estadística descriptiva. Resultados: en cuanto al diagnóstico de partida; el 36% señaló siempre; sobre la realización de la planificación basado en los postulados de las teorías que existen sobre el proceso de enseñanza-aprendizaje; el 44% dijo siempre; respecto a actividades para el desarrollo estratégico del pensamiento lógico u operativo en el niño el 60% dijo siempre; con relaciones al uso de actividades lúdicas como estrategia para la enseñanza y aprendizaje de las matemáticas en los niños de primaria el 80% manifestó siempre y sobre si los enfoques psicológicos privilegian la enseñanza y aprendizaje de las matemáticas en los niños de educación primaria en un mundo en constante transformación el 0% respondió siempre. En suma, se hace evidente que la intención del estudio de la Matemática desde la infancia debe estar direccionada a proporcionar al estudiante una visión positiva de esta ciencia, de tal forma, que adquiera las competencias de la abstracción, la lógica y el pensamiento crítico, con el necesario apoyo de los enfoques psicológicos para la enseñanza y aprendizaje adecuada de las matemáticas en los niños de educación primaria.

Palavras-chave: Educación matemática, educación primaria, enfoque psicológico.

INTRODUCTION

Today, there is recognition that mathematical science should be appreciated for the importance of the relationship between the facts and the field in which this branch of knowledge is present in human reality, that is, in daily life, most activities require decisions based on this science. By way of illustration, topics such as choosing the best alternative for the purchase of products, checking the bank account, adjusting the doses of medicines, food preparation, calculating the weight of objects, musical creativity, sports, designing buildings, cars, space rockets, among many others, are connected to this field of knowledge. It is undoubtedly a long list in which mathematics has become present in the evolution of humanity to facilitate and improve the quality of life of people.

The above is a prelude to underline once again, as has been expressed on the subject, from different edges, debates and discourses that mathematics are fundamental and essential in the education of all people and, its teaching is essential, especially in primary school, because it is where children begin to have a deeper contact with them and where the work of the teacher must aim to transmit knowledge. A mathematician accentuated on creating in the student a conscious and favorable disposition to undertake actions that lead to the solution of the problems they face every day.

In this understanding, the teaching and learning of Mathematics is a mandatory part of the Ecuadorian curriculum for the integral formation of the student from the sublevels of high school and elementary to the unified general baccalaureate and technical baccalaureate and is focused on the development of critical and reflective thinking to interpret and solve real-life problems (Ministry of Education of Ecuador, 2019). Also, digital skills are currently essential in the teaching of mathematics at the basic education levels (Moreno-Sánchez, Angulo-Quiñonez, & Prado Cruel, 2022).

To promote a more effective learning of mathematics in infants, it is required by the teacher, who has rooted the knowledge provided by psychology about the cognitive processes involved in the learning of mathematical concepts, that is, to know precisely at what level of intellectual development schoolchildren are, and thus ensure what they are able to learn at any given time. With reference to these approaches, they emphasize, educators' decisions will be more likely to be correct if they are based on the foundations of the theories that exist about the teaching-learning process (Castro, del Olmo, & Castro, 2002).

Ascribed to the above, manifests, in the development of cognitive, metacognitive, emotional, personal, social factors and aspects of the individual are influenced by the teacher; These factors intervene in their performance and are not only directed in instruction, but emphasize guiding and guiding the learning process and developing thinking and reasoning skills (Lebrija, 2017). Around this, Gestalt psychologists claim that children are able to discover mathematical concepts if they are provided with relevant material and allowed to rehearse and make mistakes; Organize your ideas until you find for yourself the rules and relationships that give rise to the concept sought (Del Prado, 2017). In this regard, Wittrock (1974) He argues, producing the ability to discover is important and for this if accompanied with verbal information a discovery practice can give better results. Linked to it, Sarmiento (2007) He affirms, the child learns naturally based on the discovery at the beginning of his life, that is why this knowledge endures, however in school much of the knowledge is sifted by the teacher who must motivate the child at the time of instruction.

On the other hand, cognitive psychologists, regarding this matter, have pointed out the convenience of the teacher possessing mathematical knowledge is concerned with knowing how students learn, including the student with special educational needs, in this way, he will be able to understand how he can teach them mathematical knowledge (Del Prado, 2017). In this sense, Delgado (2002) It is important, from the point of view of the teaching of mathematics, that the teacher can know or diagnose the so-called starting level of the student at the time of beginning the learning of a new knowledge, especially if that learning is core for its development. From this perspective, it is the responsibility of the teacher to give the child spaces in the classes so that the learning of mathematics is more playful, and create the effect of pleasure, interest, curiosity through pleasant activities, adapted to the real context and the times that elapse, in such a way that the teaching-learning process is as optimal as possible.

For the above considerations, the main objective of this work is to determine the importance given by teachers to the precepts of psychological approaches in the process of teaching and learning Mathematics in primary school children, of a Public Educational Institution in the city of Guayaquil, province of Guayas, Ecuador.

Teaching and learning mathematics in early childhood education

According to the reasoning of Rodríguez (2010), Mathematics is part of the integral development of the individual, but this fact is not evident in his first levels of study. In same order, Ramírez & López (2018) outline, mathematics is indispensable for everyday life and the development of critical thinking. According to Beltrán & Torres (2009), Critical thinking is the primary objective to be developed in the individual, both for mathematics and for integral pedagogy, it is about "providing students with the necessary tools to know the type of knowledge they should use in a given situation" (p. 69).

Mathematics is one of the pillars of teaching at all educational levels, because of the importance given to it in the knowledge society today, thus, the significant teaching of Mathematics must begin from the infant stage, making students see that this subject is not something alien, but surrounding us is part of everyday life (Marinova, 2021). This type of teaching must start from the reality and problematic situations of the classroom and life, so that in this way, children discover the need and usefulness of Mathematics in people's daily lives (Marinova, 2021).

In this same line of ideas, the role of teaching school mathematics in the last five years is aimed at linking the student's social context through learning environments that favor dialogue, reflection, discussion and decision-making (Lasprilla, 2021).

From the cognitive and pedagogical point of view, they indicated that the concepts of greatest relevance for the initial learning of mathematics are the understanding of numbers or numbers, the concepts of unity and plurality, addition and subtraction, quantitative and spatial ordering, proportions and seriation. His research profoundly marked the development of psychopedagogy and teaching methodologies (Bravo, 2016).

Objectives of the teaching and learning of mathematics in the Ecuadorian curriculum of early childhood education

The document issued by the Ministry of Education of Ecuador alleges that the teaching of Mathematics has as its fundamental purpose to develop the ability to think, reason, communicate, apply and value the relationships between ideas and real phenomena (Ministry of Education of Ecuador, 2019). The teaching of Mathematics, especially in the sublevels of high school and elementary, is linked to recreational activities that encourage creativity, socialization, communication, observation, the discovery of regularities, research and the solution of everyday problems; Learning is intuitive, visual and, in

particular, is concretized through the manipulation of objects to obtain the desired mathematical properties and introduce new concepts (Ministry of Education of Ecuador, 2019).

Psycho-evolutionary traits in early childhood education

According to evolutionary psychology, the primary school child is in the stage of concrete operations that it covers, according to what was established by Piaget (1976), from 7 to 11 years of age (Rojas & Farías, 2015). The period of development included in the stage of Primary Education, between 6 and 12 years, "coincides with a series of significant changes in the cognitive functioning of the child (...) The study of these changes is fundamental to a knowledge and understanding of the nature of the mind and the way it operates" (Muñoz, 2010, pág. 79).

The operations carried out by children at the particular stage are called quasi-systematic because they often do not remember the order in which they check the solutions to the problems. The achievement of seriation, the logic of inclusion, the notion of conservation of substances and concrete operations with objects stand out as characteristics (Rojas & Farías, 2015).

This stage of developmental theory is considered fundamental when considered as the beginning of logical or operational thinking in the child. At the stage of concrete operations, the child has acquired sufficient biological maturation to start operating through rules to reach conclusions. However, they are not yet able to think abstractly or hypothetically, so they can only apply them to physical elements; Their reasoning is limited by what they can hear, touch, and experience (Tobias, 2022).

The stage of concrete operations: from 7 to 11 years of age. When we talk about operations here, we refer to the logical operations used for problem solving. The child in this phase or stage no longer only uses the symbol, he is able to use the symbols in a logical way and, through the ability to preserve, arrive at accurate generalizations (Valdes, 2014). Following these contributions, these are first-degree operations in which the subject can operate on objects:

- 1.- In this period it achieves reversibility by:
 - a.- Investment: Class operations; What characterizes the elements are their essential similarities.
 - b.- Reciprocity: Operations on relationships; What characterizes the elements is the order between them.
- 2.- These two types of reversibility are then integrated into a single system in formal operations.
- 3.- The subject at this stage solves problems with the object in the present field. The beginning of clustering of cognitive structures occurs.
- 4.- The grouping (on a given operation elements that belong to the same system are stopped), is the structure that defines the mode of specific reasoning of the concrete operations.
- 5.- The ability to perform efficiently is also developed.
- 6.- On the other hand, social relations become more complex.

During the elementary school years, the child begins to use mental operations and logic to reflect on the facts. This ability to apply logic and mental operations allows him to approach problems more systematically than a child in the preoperational stage (Meece, 2000).

According to Piaget, the boy has made several advances at the stage of concrete operations. First, their thinking shows less rigidity and greater flexibility. The child understands that operations can be reversed or denied mentally. That is, it can return to its original state. Thus, thinking seems less centralized and self-centered. The primary school child can simultaneously look at several characteristics of the stimulus. Instead of concentrating exclusively on static states, he is now in a position to make inferences about the nature of transformations. Finally, at this stage he no longer bases his judgments on the appearance of things (Meece, 2000).

Psychology and the teaching and learning of mathematics

Psychology has been fundamental for the teaching-learning process since through it you can understand how we learn, through the fact that in each of the stages of development, the knowledge of this science will help the teacher to identify and act in the face of different difficulties, problems or learning disorders since he will know the characteristics of each of them in order to plan, Select to implement the best methodological strategies, didactics and the appropriate resources according to the needs of each student (Garzón, Rojas, Cañizares, & Culqui, 2019).

In the context of Mathematics, Psychology is very important and vice versa, because it gives tools to the teacher to manage skills, motivation and challenges and promote positive attitudes towards this science. Always bearing in mind the multiple intelligences described by Gadner (Del Prado, 2017) from the earliest school ages.

Cognitive Psychology revealed the cognitive processes involved in preschool learning the concepts of quantity, number and calculation that children must learn to perform in a semantic context (Bravo, 2016). Research by Piaget, Inhelder and Szeminska shows how children developed the psychological processes of learning mathematics and associated the operational learning of the concepts of quantity, number and calculation with the mental development of meta psychological processes and language (Bravo, 2016).

On the other hand, Vygotsky proposes the sociocultural paradigm focused on the dialectical approach that development is the product of the interactions established between the person who learns and the other individuals mediators of culture. In this way, education constitutes one of the most important sources for the development of the members of the human species, by privileging the links between social, cultural and historical factors, and their impact on intrapsychic development (Vielma & Salas, 2000).

In relation to the teaching and learning of mathematics, the teacher must take into account the concept developed by Vygotsky and which he called the Near Development Zone (ZDP), for the creation of systems of tasks and aids that enable developer learning to occur. Vygotsky conceives the Zone of Proximal Development (ZDP) as the distance between "the child's actual developmental level, as it can be determined from independent problem solving, and the potential level, determined by problem-solving under the guidance of an adult or in collaboration with a more capable partner" (Vygotsky, 1979).

In the case of Bruner's postulates, his most outstanding contribution is that of symbolic constructivism and the importance of a systematic teaching and well oriented to the development of the mental processes of the subjects in the formative period (Vielma & Salas, 2000). Brunner proposes that learning mathematical concepts be introduced from simple activities that students can manipulate to discover mathematical principles and solutions (Flores, 2001). Learning goes from the concrete to the abstract. Thus, current mathematical teaching promotes working with concrete objects before moving on to establish abstractions. When these abstractions have been consolidated, then you are already in a position to use them as concrete elements. (Flores, 2001).

METHODOLOGY

The research was classified as descriptive, since the general objective of this work was to determine the importance given by teachers to the precepts of psychological approaches in the process of teaching and learning Mathematics in primary school children, of a Public Educational Institution of the city of Guayaquil, Guayas Province, Ecuador. Around this Guevara, Verdesoto, & Castro (2020) They outline, the descriptive research aims to describe some fundamental characteristics of homogeneous sets of phenomena, using systematic criteria that allow establishing the structure or behavior of the phenomena under study, providing systematic information comparable with that of other sources.

Likewise, it is a field study, because it was developed within the facilities of the selected school, allowing to obtain the required information through those involved; that is, the teachers who work at the primary education level of the institution addressed as a context of this inquiry. In this regard, they point out Tamayo & Tamayo (2012) An investigation is considered field design when the data are collected directly from reality, which is why we call them primary, their value lies in that they allow us to verify the true conditions in which the data have been obtained, which facilitates its review or modification in case of doubts.

Population and sample

The population under study consisted of twenty-five teachers (25) who work as indicated in previous lines in the primary education stage. In this regard, it states Tamayo & Tamayo (2012) the population, is the totality of a phenomenon of study, includes the totality of population units that integrate said phenomenon, must be quantified for a certain study integrating a set N of entities that participate in a certain characteristic called population because it constitutes the totality of the phenomenon assigned to a study or research; When the entire population is taken for a study and it is not necessary to make a sample, it is said that the universe has been investigated.

In this particular case, we worked with the universe, therefore, no sample was taken, so the sample is considered census because 100% of the population was selected when considering it a manageable number of subjects. In this sense Ramírez (1999) The census sample is one where all research units are considered as samples. Hence, the population to be studied is specified as a census because it is simultaneously universe, population and sample.

Data collection techniques and instruments

To collect the information, the interview was applied as a technique and as an instrument a questionnaire type Likert scale, with answer alternatives: always, almost always, rarely and never. The interview, understood by Bisquerra (2016) as a

"technique whose objective is to obtain information in an oral and personalized way, about lived events and subjective aspects of the person such as beliefs, attitudes, opinions, heat, in relation to the situation being studied" (p. 328). On the other hand, the questionnaire consists of a set of questions regarding one or more variables to be measured (Hernández, Fernández, & Baptista, 2014).

Validity and reliability of instruments

The instrument was validated through expert judgment; who proceeded to review it in terms of its content, criteria and construct. According to Hernández, Fernández, & Baptista (2014), Instrument validity refers to the degree to which an instrument actually measures the variable it purports to measure. Regarding reliability (0.88) was obtained by applying the Alpha Cronbach coefficient, which indicates high reliability. In this sense, the reliability of the instruments used in this research, a pilot test was carried out on a group of teachers with the same characteristics of the study universe. Thus, when we talk about reliability, we denote the degree to which the repeated application of an instrument to the same individual or object produces equal results (Hernández, Fernández, & Baptista, 2014).

Data analysis

A quantitative analysis of the data was performed using descriptive statistics. The results are presented in a frequency distribution table for interpretation and analysis. In estimates of Hernández, Fernández, & Baptista (2014), Quantitative analysis "is a technique to study any type of communication in an "objective" and systematic way and that quantifies the messages or contents in categories and sub-categories and subjects them to statistical analysis (p. 260).

RESULTS AND DISCUSSION

This segment corresponds to the reflective stage that involves the systematization of closely linked operations, which allow the meaningful interpretation of the data collected through the application of the instrument developed for this purpose (questionnaire) to twenty-five teachers of a public educational institution in the city of Guayaquil, province of Guayas, Ecuador. This instrument is used to know the importance that teachers give to the precepts of psychological approaches in the process of teaching and learning Mathematics in primary school children.

Table 1. Frequency distribution on question 1.- *Do you make a diagnosis to determine the starting level of the student at the time of beginning the process of teaching and learning a new knowledge of Mathematics of the students in your charge?*

| Alternative Response | Frequency (F) | Percentage (%) |
|----------------------|---------------|----------------|
| Always | 9 | 36% |
| Almost always | 12 | 48% |
| Rarely | 3 | 12% |
| Never | 1 | 4% |
| Total | 25 | 100 |

Source: Data collection instrument.

Interpretation and analysis

The results show, in terms of carrying out the diagnosis to determine the starting level of the student at the time of beginning the process of teaching and learning a new knowledge of Mathematics the schoolchildren in charge by the teacher, that 36% of respondents indicate that they always do it; 48% answer that almost always; 12% indicate that they rarely make the diagnosis of departure; and 4% never answered. In this way, it is detailed as relevant that the highest percentage of response, corresponded to the option almost always and that there is also a significant percentage (16%), if the answers of few times and never are added, which manifest not to make the initial diagnosis and in the best of cases they do it rarely.

About that, Moncada (2016) Highlights, the diagnostic evaluation refers to an educational process which is aimed at obtaining cognitive realities of students, which will allow the teacher to know from where he has to start to achieve meaningful and quality learning. For its part, Cobeña & Yáñez (2022) They consider that, this process applied correctly allows to collect the information to identify the shortcomings and strengths in the student, consolidate his learning and link the new with what he already knows, this will contribute to know the areas in which learning has to be strengthened and in turn execute an improvement plan for decision making. Likewise, Delgado (2002) It is important, from the point of view of the

teaching of mathematics, that the teacher can know or diagnose the so-called starting level of the student at the time of beginning the learning of a new knowledge, especially if that learning is core for its development.

Table 2. Frequency distribution on question 2.- *Do you plan the mathematics classes of the schoolchildren in your charge based on the postulates of the theories that exist about the teaching-learning process?*

| Alternative Response | Frequency (F) | Percentage (%) |
|----------------------|---------------|----------------|
| Always | 11 | 44% |
| Almost always | 9 | 36% |
| Rarely | 5 | 20% |
| Never | 0 | % |
| Total | 25 | 100 |

Source: Data collection instrument.

Interpretation and Analysis

From the answers obtained from the teachers surveyed, it can be observed: 44% said that they always plan the mathematics classes of the schoolchildren in their charge based on the postulates of the theories that exist about the teaching-learning process; 36% indicated that almost always; 20% estimate that they rarely and 0% considered the alternative never as an answer. If these views are adopted, it can be concluded that a good number of these educators are clear about the importance of cementing lesson planning on teaching and learning theories.

In essence, according to Rivas (2008), it is about knowing that, the formation of primary mathematical knowledge begins much earlier, in the physical, family and social space and from this point of anchoring of psychogenesis, Mathematics education must begin its pedagogical reflections and studies on the formation of mathematical thinking within the framework of Preschool Education and the first six years of Basic or Primary Education, favoring the conformation of its logical-mathematical structure that educates the child's thinking, continue in the puberty, strengthen in the adolescent and consolidate definitively in the adult, for which the teacher must be not only aware of this principle, but to put it into practice daily in his pedagogical routine. In the words of Godino (2010) There are theories of teaching and learning that refer that within the factors "knowing how to learn" and "knowing how to teach" in the practice of Mathematics, in addition to the specificity of the knowledge taught, the psychopedagogical aspects that intervene must be taken into consideration as a relevant fact in obtaining knowledge in this disciplinary field. Additionally, the mathematician points out, reflecting on the processes of creation and communication of mathematics, he has been forced to practice the profession of epistemologist, psychologist, sociologist, that is, the craft of didactic (Godino, 2010).

Table 3. Frequency distribution on question 3.- *Do you strategically privilege logical or operational thinking in the child for the resolution of problems related to the real context of the student?*

| Alternative Response | Frequency (F) | Percentage (%) |
|----------------------|---------------|----------------|
| Always | 15 | 60% |
| Almost always | 9 | 36% |
| Rarely | 1 | 4% |
| Never | 0 | 0% |
| Total | 25 | 100 |

Source: Data collection instrument.

Interpretation and analysis

The data obtained express that a universe of 60% of respondents consider that they always strategically privilege logical or operational thinking in the child for the resolution of problems related to the real context of the child; 36% observe almost always; a proportion of 4% say rarely and with 0%, the option was never considered as an answer by the teachers of the institution.

In view of these results, Suástegui & Gell (2022) emphasize, logical thinking is essential to solve everyday problems, hence, Pedagogy points out that teachers should promote experiences, activities, games and projects that allow children to develop their logical thinking through observation, exploration, comparison and classification of objects. Thus, according to (Ruiz, 2011) Although many of Piaget's contributions are still valid and have been used in the teaching of elementary mathematics, his assertion that logical operations are a prerequisite for constructing numerical and arithmetic concepts has

been answered from more recent approaches that defend a model of integration of skills, where both the development of numerical and logical aspects are important. Also Ruiz (2011) He considers important the need, on the part of the teacher, to know what the basic mathematical concepts and skills are, how they are acquired and what cognitive processes underlie mathematical execution. Likewise, Ruiz (2011) He emphasizes, the objective of teaching mathematics is not only that children learn the traditional rules of arithmetic, units of measurement and geometric notions, but its main purpose is that they can solve problems and apply mathematical concepts and skills to function in everyday life.

Table 4. Frequency distribution on question 4.- *Do you consider playful activity as a strategy for teaching and learning mathematics in primary school children?*

| Alternative Response | Frequency (F) | Percentage (%) |
|----------------------|---------------|----------------|
| Always | 20 | 80% |
| Almost always | 5 | 20% |
| Rarely | 0 | 0% |
| Never | 0 | 0% |
| Total | 25 | 100 |

Source: Data collection instrument.

Interpretation and analysis

It can be observed from the results that in terms of considering the playful activity as a strategy for the teaching and learning of mathematics in primary school children , teachers in 80% indicate that playful activity is always considered as a strategy for the teaching and learning of mathematics in primary school children; 20% answered almost always; and the options rarely with 0% and never with equal 0% percentage were not considered as a response by the participating teachers. These results show that the educators consulted are clear that, to generate a positive attitude of mathematics in students from the earliest age, teaching and learning this subject must be a fun experience for children.

In this sense, Caballero (2022) It refers, the didactic game, which can also be understood as playful activities, can be used at different levels of education especially in initial and primary for the development of their physical abilities and creativity. Framed in it, Ramirez (2021) He argues that the game allows learners to develop their personal, soft, social, cognitive skills and especially in mathematical competence in problem solving and participation.

Table 5. Frequency distribution on question 5.- *Do you consider that psychological approaches privilege the teaching and learning of mathematics in primary school children in a world in constant transformation?*

| Alternative Response | Frequency (F) | Percentage (%) |
|----------------------|---------------|----------------|
| Always | 15 | 60% |
| Almost always | 8 | 32% |
| Rarely | 2 | 8% |
| Never | 0 | 0% |
| Total | 25 | 100 |

Source: Data collection instrument.

Interpretation and analysis

It can be observed from the results that regarding the question of whether psychological approaches privilege the teaching and learning of mathematics in primary school children in a world in constant transformation that, teachers in 60% indicate that always; 32% respond almost always; 8% rarely and the alternative never with 0% was not considered as an answer by the participating teachers.

The data provided by most of the educators surveyed are consistent with those who affirm that in the didactic approaches for the change of mathematics education in recent years, the psychological keys have marked the different trends that are emerging today within the teaching and learning of Mathematics , referred to on special mention to the cognitive processes involved in the learning of mathematical concepts, and the learning of Mathematics from a social perspective, where each teaching unit has to be prepared in such a way that it takes into consideration, in addition to the special mathematical knowledge proposed according to age and mathematical training, the importance and usefulness of this mathematical knowledge, In such a way that, the student is the center of this process and has a leading role in his self-

learning, in which the teacher acts as a mediator, in a participatory context that promotes cooperative learning, from the exchanges and socialization of actions and tasks, where, especially strategies such as games in primary mathematics education, lead to meaningful learning in a pleasant and pleasant context for the infant to solve mathematical problems and everyday life.

In this way, the cognitive, psychogenetic and sociocultural paradigms on human learning have contributed useful methodological and theoretical elements to the study of mathematics teaching (Miranda & Gómez, 2018). Thus, the psychogenetic paradigm suggests that teachers are producers of didactic sequences with which students can build their own knowledge. For Piaget (1948), Teaching is a space where the teacher creates useful problems for students. By "useful," Piaget refers to those problems that stimulate initiative and inquiry in students. According to Vygotsky, a teacher not only guides students in the construction of their knowledge, but is part of this construction (Miranda & Gómez, 2018).

FINAL CONSIDERATIONS

It is evident the importance of mathematics to achieve good performance in daily life, because as has been reviewed in the various texts consulted and in previous paragraphs in this same document, it is constantly required to make operations in everyday life that have to do with this science, such as purchases, payments, banking transactions or others, Therefore, a clear understanding of mathematical knowledge is essential to succeed in the logical and coherent development of today's society.

Thus, from various aspects has been raised with emphasis, the fundamental role of the school in the quality training of the processes of teaching and mathematical learning from the first years of life of the school, because it is where children begin to have a deeper contact with them and where it is of utmost importance that a favorable idea of mathematics is transmitted and for this we must change The way in which they are presented to students so that it is attractive, easy to understand and fun at this stage of the infant's development and thus cement the best foundations for the learning processes in the later years of study.

This reflection makes it clear that the intention of the study of Mathematics from childhood should be aimed at providing the student with a positive vision of this science, in such a way, that he gradually acquires the skills that the subject helps to enhance such as abstraction, logic and critical thinking, as well as, it has been expressed on the necessary support provided by the psychological approach for the teaching and learning of mathematics in the children in primary education.

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