

Psychomotricity in the Cognitive Development of Children in Initial Education

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Abstract

The incidence of the development of psychomotor skills, in the cognitive area of children attending Initial Education, was studied at the "Martina Carrillo" Initial Education Center in the community of Carpuela, Ecuador. A qualitative and quantitative study was carried out, supported by the deductive method; whose purpose is to raise awareness about the importance of carrying out psychomotor activities as a methodology that responds to children's interests and needs while respecting individuality, in a way that favors integral development. Surveys, interviews with parents and teachers, as well as observation cards were applied to the children of the institution. The directly proportional relationship between psychomotor maturity and infant cognitive development could be evidenced, showing a good level of achievement for age in the evaluated areas in the sample of children from 4 to 5 years, obtaining maturity percentages in terms of psychomotor skills 91.6% and in the cognitive area 86.7%; this being useful not only in the immediate development of the cognitive area; but the future student future in relation to the acquisition of the reading and writing process.

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I. INTRODUCTION

The importance of children's cognitive development has made teaching efforts constantly turn towards the achievement of achievements and therefore their stimulation of this area, giving it higher priority; However, it must be considered that the first purpose of early-stage education is to provide children with experiences that meet their needs and interests in search of the development of abilities and skills that enhance physical, psychomotor, intellectual and emotional development; Being childhood the most important evolutionary stage of human beings, one of the reasons is explained by Antoranz and Villalba (2010), who assure that during the first year of life the brain structure that will determine future learning is created.

It can be assured that the greater the stimulation of

psychomotor skills, the greater the cognitive development; and for the comprehensive child development process to be carried out successfully, it is important not to leave out any area of development to promote one that is considered especially important in academic life (Antoranz and Villalba, 2010).

In this research, it was evaluated the use of resources, methodology and practical activities by means of which the teachers of the Center of Initial Education (CEI) "Martina Carrillo" of the Ambuqui parish, city of Ibarra, Ecuador, stimulate psychomotricity; family participation in its development and how all this affects the cognitive and language development of infants, so that, as a result of this, the incorporation of psychomotricity as a means of stimulating the child in

their cognitive development is proposed, improving the relationship with their environment and their autonomy; providing teachers with a support document that allows them to improve their daily work.

The concepts of psychomotricity and cognitive development are taken into account as a referential framework, considering the former as everything related to psychology and motor skills and the complex relationships that exist between these two fields (Díaz, 2001) and the latter, as the maturity of the cognitive processes of perception, attention, memory, executive functions, language, spatio-temporal orientation and personal schema (Díaz, 2001). The movement then becomes technical or symbolic and refers to the plane of representation and knowledge” (Wallon, 1968). Psychomotor development skills, body schema, laterality, balance, reflexes, spatial structuring, rhythm and motor skills are also considered. (Pérez, 2004).

II. MATERIALS AND METHODS

The research consisted of the following stages: collection of information held by the manager who works at this level, data about the teaching work in the areas to be studied, participation of parents in the teaching-learning process, evaluation of children, analysis of results, and design of a manual of activities that develop the psychomotor area

1. Collection of information held by the manager who works at this level

An interview was conducted with the zonal coordinator of Initial Education, in order to establish their degree of knowledge on the subject: psychomotricity and its impact on the cognitive development of children; using a script prepared for the purposes of this investigation.

2. Collection of data from teachers responsible for child stimulation

In order to obtain direct information about the work

carried out by those responsible for formal child education, a survey was conducted to the two teachers who work with the group of children from 4 to 5 years old, of Afro-Ecuadorian ethnicity and who are attending initial education in the CEI "Martina Carrillo" located in the community of Carpuela, Ecuador-

The survey contained questions regarding the use of gaming as a methodological resource, the traditional games of the town as stimulators of motor skills, their opinion about the importance of stimulating psychomotor skills, and the frequency of the use of balls, ropes, classrooms, sticks; to carry out gross motor activities; mullos, puzzles, playdoughs, crayons, paper, blocks, paints, to carry out fine motor activities; development of activities for learning notions such as: inside-outside, top-down; frequency of games such as jumping on one and two feet, carrying out stringing activities, using textures, carrying out throwing games with balls; activities such as crawling, climbing; in addition to the use of fingerprint paint.

3. Collection of data from parents

A survey was applied to parents of the 34 children, participants in the study, in order to know the family contribution in their psychomotor development.

4. Assessment to children

The study group was represented by 34 boys and girls from 4 to 5 years old, of Afro-Ecuadorian ethnicity, from the community of Carpuela who daily attend the CEI "Martina Carrillo".

Direct observation was performed using an observation sheet as an instrument to record the information required on infants. The file consisted of activities corresponding to each of the development areas, with their respective indicators. For the elaboration of said activities, the skills proposed by the Ecuadorian Initial Education curriculum for this age group were taken into account.

The Language area of the file records 8 activities that allowed creativity, the way to express ideas, emotions and feelings to be assessed, using verbal and non- verbal symbols. The gross motor area registers 12 and fine motor 11 activities in which global dynamic coordination, dissociation of movements, dynamic and static balance and orientation in space were appreciated. The cognitive area presents 8 activities that evaluate notions of space, quantity, body schema and laterality. In the socio-emotional area, 4 activities are recorded that value interaction with peers, self-knowledge and generation of actions and attitudes that require the least help from the adult. This process was carried out daily with an individualized evaluation modality; Considering the age of the children, a time of 60 minutes was required for each one for their realization.

5. Analysis of Results

For this analysis, it was used descriptive statistics, analysis of means and percentages of the responses obtained at the different levels of data collection, interpreting them using histograms and grouping the responses with the highest absolute frequency; for a simplified analysis of the results.

6. Design of an activity manual for psychomotor development.

Based on the results obtained from the evaluations of the children participating in the study, of the teachers in charge of formal education, the knowledge of the administrative manager on the subject and family participation in psychomotor education, a guide was designed that includes activities that allow to develop the objectives that are outlined in the initial education curriculum in force in Ecuador. The activities stimulate global dynamic coordination, control of strength, muscle tone and relaxation, postural control in activities of static and dynamic balance, spatio- temporal orientation, laterality, body schema, motor coordination, visual perception, socialization,

language, coordination of segmented movements, fine motor, attention, visual-motor coordination, gross motor, auditory perception and are structured with objectives, resources, time, development, closure and evaluation. This proposal will benefit the children of the community, allowing the development of basic skills for future learning and the teachers of the Institution since they will be able to count on a variety of methodological activities, favoring the integral development of the child and strengthening the affective ties

III. RESULTS & DISCUSSIONS

1. Interview with the Zonal Director of Initial Education

The following paragraphs present a summary of the opinion expressed by the interviewed manager.

Being an initial education teacher is a responsibility that is not only about training children at the cognitive level, but also about forming whole human beings; For which the current initial education curriculum offers a great contribution since it plays a decisive role in delineating the objectives of the level, which, in fact, are only successfully achieved with family support.

The methodology, currently used in the classroom, is mainly game-work; activities proposed through play in the learning spaces (corners), complemented by art activities, the available teaching material is not yet sufficient, but elementary and basic material is available for the level.

The playful activities planned by the teacher's favor and complement the development of fine and gross motor skills that in turn favor the cognitive development of children; for this reason, the areas proposed in the curriculum emphasize playful and motor activities.

And finally, the interviewee concludes, stressing that

the environment influences the development of psychomotricity and the influence of the environment on the development of psychomotricity can be clearly distinguished in boys and girls from initial education; giving as an example that children in the rural sector have a greater development of gross motor skills, because they have the possibility of running, jumping, climbing freely through open spaces; while urban children have a better fine motor development, because they have contact and access to video games, tablets, cell phones or computers.

2. Collection of data from teachers responsible for child stimulation

The survey applied to teachers responsible for child stimulation allowed obtaining data on their work, which are presented below

Table 1. Use of games

Indicator	(fi) YES		(fi) NO	
		%		%
Use of games as methodology resource	2	100	0	0
Use of traditional games.	1	50	1	50

Source: CEI “Martina Carrillo” teachers.

Table 1 shows that, regarding the use of the game as a methodological resource in the stimulation of psychomotricity, 100% of teachers surveyed prefer to do it, plus only 50% use traditional games in the locality.

Table 2. Frequency of the use of materials and methods.

Indicator/ Frequency	(fi) Always	%	(fi)	%
			Almost always	

Use of materials for fine motor skills	2	100	0	0
Reinforcement of spatial notions	2	100	0	0
Jump on one or two feet	1	50	1	50
Skewered	0	0	2	100
Texture manipulation	2	100	0	0
Throwing balls	2	100	0	0
Crawl, climb	2	100	0	0
Fingerprint paint	2	100	0	0

Source: CEI “Martina Carrillo” teachers

Regarding the use of various materials and methods, in Table 2 it can be seen that 100% of teachers always use fine texture manipulation in their classroom to manipulate textures, throw balls to reinforce motor skills thick, activities like crawling, climbing, fingerprint painting and texture manipulation.

In addition to the aforementioned, teachers consider that psychomotricity stimulates integral development and favors the process of subsequent acquisition of literacy.

3. Collection of data from parents

Table 3. Behaviors of parents

Indicator	(fi)	%	(fi)	%
	Yes		NO	
Massage for children	27	79,4	7	20,6
Stable play time	25	73,53	9	26,47

Source: CEI “Martina Carrillo” parents

Regarding the conduction of conducts favorable for

motor stimulation, Table 3 shows that 79.4% of parents affirm that they perform massages, thus favoring the stimulation of muscle tone, and 73.53% assure that they maintain playing times. stable with the children in their care.

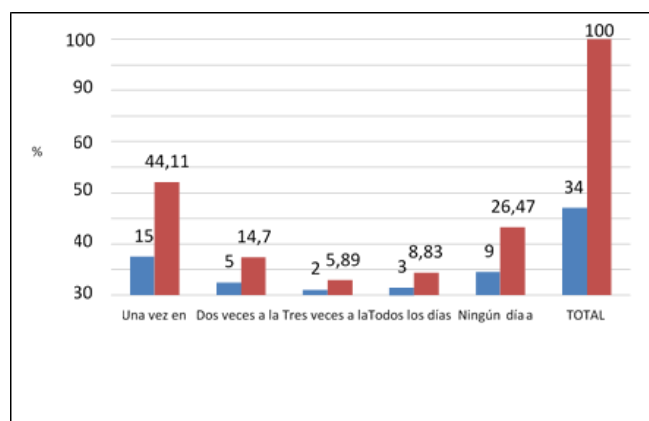


Figure 1: Frequency of games Source: CEI “Martina Carrillo” parents

Figure 1 shows the frequency with which the majority of the parents in the sample dedicate time exclusively to play. The results indicate that 44.11% do it once a week: while 26.47% affirm that they do not dedicate any weekly time to such activity.

Table 4 (A): Promotion of activities by parents

Indicator/ Frequency	(fi) Always	%	(fi) Almost always	%	(fi) Sometimes	%
Outdoor games	12	35,29	5	14,7	8	23,53
Use of modeling clay	12	35,29	7	20,59	5	14,7
Games with balls	8	23,52	16	47,05	4	11,77
Games with puzzles	6	17,65	10	29,41	7	20,59
Free painting	8	23,52	20	58,82	4	11,77
Crawl, climb	5	14,7	8	23,52	7	20,59

Source: CEI “Martina Carrillo” parents

Table 4 (B): Promotion of activities by parents

Indicator/ Frequency	(fi) Rarely	%	(fi) Never	%
Outdoor games	9	26,48	0	0
Use of modeling clay	3	8,83	7	20,59
Games with balls	2	5,89	4	11,77
Games with puzzles	6	17,65	5	14,7
Free painting	2	5,89	0	0
Crawl, climb	8	23,53	6	17,66

Source: CEI “Martina Carrillo” parents

Table 4 shows that the percentage of parents who promote activities of this type does not reach 50% in the absolute frequencies of temporality, always or almost always.

The results obtained reflect the need to train parents about the importance for child development that it has in child stimulation in the area of psychomotricity, making its benefits known.

4. Child reevaluation

Children in this area have achieved a good level of development. In an indirect way, all the activities that are carried out influence the neural activity. A clear example is when the child reaches for the ball, at that moment he activates the perception of his own body, of space and distance from the object. All this stimulation in this area will have an impact on subsequent processes in the school stage, such as reading, writing and attention span.

Table 5: Evaluation of the gross motor area

INDICATORS	YES		NO		IN PROCESS	
	fi	%	fi	%	fi	%

Jump vertically and horizontally	34	100	0	0	0	0
Jump back	34	100	0	0	0	0
Sing songs following the rhythm and coordinate with the expressions of your body	32	94	1	3	1	3
Jump from one foot to the other autonomously	31	91	1	0	2	6
Walk on a bar in balance	32	94	0	0	2	6
Throw balls into a box	33	97	1	3	2	6
Throw a ball up and catch it with both hands	30	88	1	0	3	9
Run on one foot	33	97	0	0	1	3
Bounce the ball with one hand	30	88	0	0	4	12
Climb stairs alternating legs	34	100	0	0	0	0
Kick balls to a fixed point	33	97	0	0	1	3

Source: Children from 4 to 5 years old of the CEI “Martina Carrillo”

Table 5 shows that most of the children presented a good level of gross motor development. The children under study achieved developmental achievements commensurate with their age.

The actions throwing a ball upwards and catching with both hands, singing songs following the rhythm and coordinating with the expressions of his body and

bouncing the ball with one hand, were the only ones that presented an absolute frequency in process and not reached; probably due to differences in family stimulation or to the diversity of children in learning new actions; However, it is important to note that the methods and techniques used by the teacher greatly influence the learning of these actions. Cabrera (2019) affirms that this learning develops, in preschool children, motivation to learn, since it allows them to

know the phenomena of the world around them. In the same way, he manages to unfold the responsibility in the fulfillment of the entrusted tasks, share a collective work with his colleagues and easily accept to work and share a collective work in the peer group. (Lopez, 2016). Therefore, it can be inferred that gross motor skills indeed play a fundamental role in child development.

In the fine motor area, children have reached an optimal level for their age group. The intellectual and the physical are totally related, making it a palpable reality in the child's development. The opportunity offered to him when carrying out the activities where he relies on graphical plastic techniques corroborates the contribution of Piaget. J., (1973) who stated that the manipulation of objects is an important aspect for the construction of intelligence.

Table 6: Fine Motor Evaluation

Indicator	Yes		No		In process	
	fi	%	fi	%	fi	%
Build towers with more than 6 elements	34	100	0	0	0	0
Grab the pencil properly	30	88	0	0	4	12
Puncture straight wavy, zig- and zag lines	33	97	0	0	1	3
Color while respecting margins	18	53	3	9	13	38
Draw the human figure	31	91	0	0	3	9
Use the pencil grasp to crinkle paper	34	100	0	0	0	0
Express their experiences through free drawing	28	82	2	6	4	12
Make shapes with modeling clay by joining 2 to 3 parts	33	97	0	0	1	3
Cuts curves	25	74	4	12	5	15
Screw threaded objects	34	100	0	0	0	0

Source: Children from 4 to 5 years old of the CEI “Martina Carrillo”

It can be seen in Table 6 that the actions of screwing in threaded objects, using the pencil grasped to crinkle paper and building towers with more than six elements, were

achieved by 100% of the children under study; This will allow a good handling of the pencil and therefore the writing learning process. It can also be seen that in the coloring actions respecting margins and cutting in curved lines, a great development was not achieved (63.5%).

Cabrera, (2019) used a system of structured activities aimed at diagnosing fine motor skills, obtaining satisfactory results using different actions than those used in this research; however, the result was similar, yielding high percentages of development.

The processes of literacy in early childhood are usually focused on generating a development of fine motor skills in terms of the movement of the hand on paper, within the framework of this study and in a contrary and premeditated way (Bolaños, Pérez, Casallas, 2018).

Table 7: Evaluation of the cognitive area

Indicators	Yes		No		I process	
	fi	%	fi	%	fi	%
Identify time characteristics: morning, afternoon, night	32	94	0	0	2	6
Compare and build collections of more, equal and less objects	31	91	1	3	2	6
Classify objects with two attributes (size, color)	33	97	0	0	1	3
Sequentially sorts objects according to size	30	88	2	6	2	6
Dimensional structuring: large-medium-small, high-low, thick-thin, long-short, inside-outside, near-far, front-back	31	91	1	0	2	6
Recognize geometric shapes: square, circle, triangle	32	94	0	0	2	6

Identify the left and right sides of your body	27	79	0	0	7	21
Include the relation number and quantity up to 5	27	79	0	0	7	21
Name 8 colors	28	82	0	0	6	18

Source: Children from 4 to 5 years old of the CEI “Martina Carrillo”

The children participating in this study achieved a favorable development in the evaluated activities. For Piaget. J., (1973) one of the variables that determine cognitive development is the physical experience where playing, manipulating objects, experiencing and discovering are actions that influence cognitive, motor and sensory effects. It is in the preparatory period that children are able to do one-to-one matching and to sort and order objects, ready for higher-level activities such as those involving numbering and spatio-temporal relationships

The activities identifying time characteristics (morning, afternoon, night), classifying objects with two attributes (size, color or shape), recognizing geometric figures (square, circle, triangle) are those that obtained the highest percentage of development; and in fact, the percentage progress is equitable in most of the evaluated activities. The applied methodology was based on the scope of consolidated development, the structure and bases of the child's personality, making childhood the most important and important stage for human development.

Stimulation of development in childhood is very important, as reflected by Heckman, who, in 2004, reported that investment in children cannot be postponed until they reach adulthood; not even wait until school age, because learning is a dynamic process and is most effective when it begins at a young age and continues through adulthood; therefore, educational programs should be started from early childhood in order to maximize the development and comprehensive training of each child (Gutiérrez, 2018).

Inferring about the possible relationships between the results obtained in the area of motor skills and those of cognitive development, there is a correspondence in the degree of maturity of the skills, these being satisfactory in terms of age achievement.

The results obtained allow us to affirm as Gutiérrez 2019 who affirmed that learning begins with birth, which demands care and education in early childhood, applied to it through family, community, or institutional measures.

It was evident that the psychomotor activities carried out by teachers have allowed the majority of children to develop all their areas, although they are frequently repeated.

Not applying an appropriate methodology that arouses interest and not working with the individualities of infants has meant that not all children have achieved the learning necessary for their age.

Psychomotricity allows a comprehensive development, permanent support from the family is essential, in the case of the child who does not reach the development of skills, one of the causes is because the parents do not assume their responsibility, the lack of time to engage in play activities and the affection that the child lacks, have caused his motor skills to be delayed and his language to be unsatisfactory and consequently the cognitive as well as the social and emotional areas are affected.

The neurological development of children is determined by the environment in which they operate and only children's centers are the ideal places that guarantee early stimulation; In it, the child explores and obtains sensorimotor, perceptual, linguistic and socialization experiences that allow the generation of basic notions through dialogue between the organism and its environment; however, the atmosphere.

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