



Scientific and cognitive importance of the body in relation to movement

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Summary

The need to adapt and reformulate the curricular proposals to the contextual variables of the pedagogical, academic, social, and cultural scenario, in addition to knowing the significant aspects of the context of their students and the perspectives and projections of the thought process that they want to activate in the students in each meeting, facilitates the development of cognitive, emotional and affective skills from the interaction of the various representations and extrapolations of knowledge in relation to the world. Knowledge of corporeality and the body is a decisive factor in the development of motor skill sinteracting with the body and mind enables mental and motor challenges and a whole set of sensory activities that, by building new neurological pathways, contribute to the maturity of mental processes and to higher-level abstraction and abduction processes in each conscious exercise. The cerebellum plays a very important role in visual processing, spatial perception, and cognitive abilities, along with motor development, in such a way that using neural networks and the whole brain, not only to think but to be in motion, generates neural pathways that stimulate cognitive performance. So, developing gross motor skills such as crawling, walking, dancing, running, jumping, etc., greatly influence the ability and development of the executive functions of the brain,

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1. Introduction

There is no doubt that teaching practices in different scenarios are the perfect space for direct observation, collection, systematization, and data analysis. What facilitates an objective, reflective, and critical look at education through daily life, the doing and being of the teacher and the community.

In this order of ideas, reflecting on the educational reality and retaking the vision of the pedagogical approaches or paradigms that still trap us is an obligatory matter, thus, Morín (1999) emphasizes the importance of educating based on knowledge that involves the physical, the biological, the psychic, the cultural, the social, the ethical, and the historical, to achieve an education and an inclusive society, therefore, he affirms, education must seek "that the conscience develops in a relationship of unique individual- society, as a democratic construction for peace and coexistence (p. 18). From this perspective, the development of cognitive structures of a high level of abstraction and conceptualization, is achieved not only from the construction of theoretical knowledge but from a whole relationship of body, movement, space, and emotions.

1.1 Theoretical foundations

1.1.1. Body, cognition and movement: assertive learning

Cognitive structures are the basis of thought patterns (set of mental structures) that are amalgamated to form a product and depend on the planned objective in the development process, whether of a cognitive nature (abduct, deduce, synthesize, analyze, identify); affective partner (interact, value, appreciate); communicative (understand, interpret, designate), or psychomotor (coordinate, apply, pronounce, etc.) and the individual's cognitive style, that is, their thought pattern, therefore, the ease of processing, storing, produce and relate new knowledge from the knowledge of corporeity and the development of learning processes, this new knowledge is built and deconstructed from the amalgamation and mainstreaming of the subject from problem analysis.

Such neural ability to select targets and goals helps us achieve neural synchronization and cognitive balance. This development demonstrates, without a doubt, that the work of the teacher and the school, as stated by Porlan (1989), "must be accompanied by a conscious rational and somewhat scientific knowledge of the most significant elements of the classroom and the context, among them the functioning hidden between the social structure and academic tasks; therefore, a careful analysis of the exchanges in the educational context is necessary" (p.10) and said context cannot be far from the present body of the individual, we cannot continue to deny emotions and the body in educational processes.

From this point of view, the school-society-subject mediation converts this relationship network of meaning into meaning and value, since, as stated (Weber, 2002), the first thing that constitutes man as a subject is the body, which is conceived as a relationship, as a network of meanings that facilitates the management of plural identity, cultural identity and self in relation to the other. These multimodal educational practices challenge the individual, their context, and their actions, thus, they reveal the multiple ways of participating and being in the world as subject-users, the multiple forms and types of learning that must be mediated by the body and emotions. in a cultural, social and real context. Parodying Weber, the body is presented as a process of transformation of the subjects within modern capitalist societies, the body is one of the many elements where it can be seen how the change of mentality of a certain time transforms the practices and social imaginaries regulated by beliefs. Hence, the body is comparable to affectivities, passions, and unreason. (Ortiz, L, 2021)

The development of mental processes as a fundamental pillar and center of education helps to enrich and recognize our emotions through bodily manifestations, which once confronted are a great start for children to deconstruct and build a learning process with their own ideas and abstractions that are modified as they manage to arrive. to their own conceptualizations. The result of their perceptions, the recognition of their emotions, and learning with conscious movement together with the recognition of their body as a generator of emotions makes the sensory world enrich as a result of observation, knowledge, and appropriation of the context and the real world., what it is will be a bulwark for the construction of the brain architecture that will build the solid foundations of abstract thought. (Morin 2013)

This implies presenting the educational, social, cultural reality and professional activity, as a source of problematic situations and inspiration to dimension the possibilities offered by corporality in educational research as an effective process that is part of the pedagogical exercise of production and interrelation of trans and interdisciplinary knowledge, in order to open the possibility of generating processes of intervention and transformation of the subject in the social context and of building knowledge in the disciplinary, investigative, social and cultural field.¹

In the same way, it is essential to recreate pedagogical spaces and scenarios with innovative, creative, and multimedia prospects, so that both students and teachers have the freedom, commitment, and responsibility to investigate, project, and create actions that promote the expression of what has been learned through different channels and forms of communication.

From all this, the importance of respecting learning styles and rhythms can be deduced, stimulating neuronal action patterns (diffuse and focused thinking), which favors epistemic confrontation and its actions in the face of leadership in the pedagogical, family, socio-cultural, political, and economic. When the development of the abilities and skills of coordinated movements is achieved, the prefrontal lobes experience and initiate the management of cognitive balance, thus establishing the functions of leadership, self-control, and self-esteem. In such a way that cognitive control leads to the development of executive functions, which are cognitive abilities: flexible attention (allows us to maintain and/or change attention to what is most important, keeping us on our tasks); working memory (ability to store and remember important information so that it can be used at the right time); inhibitory control (ability to stop and think before acting, its development is essential because it helps control impulses), these executive functions help us set goals and carry them out, these skills are for life and a vital commitment in education in all its aspects.

These tasks of the frontal lobes stimulate neural changes that positively affect learning, which favors the connection of neuromodulators that stimulate and create the synapse. Some neurotransmitters that must activate and are activated with these pedagogical interaction processes are, for example, dopamine, fundamental because it is related to motivation, especially in the expectation of reward, and is essential for learning; In a novel activity for the individual, the right hemisphere is activated to a greater extent. These novel activities trigger the release of dopamine, which generates an optimal motivational state for learning and developing the programmed activity. Waiting for the reward increases the level of commitment and stimulates neuroreceptors, Sports and the arts keep the dopamine level high.

On the other hand, it is important to highlight how in the confrontation and interaction with game groups, the neurotransmitter called oxytocin favors and guarantees relationships of trust and generosity in the recognition and appreciation of the other in social interaction; the neuromodulator called Acetylcholine controls synaptic flexibility important to create new neural pathways and cognitive networks is key in the development of focused thinking, attention,

¹Ortiz, Marilyn. Description of the existing problems in the pedagogical training of the District University. Bogota.2000. 2988

and observation. When this substance is released, it helps to maintain long-term memories, which is why the activities, dynamics, and pedagogical strategies must be highly elaborated and designed to develop long-term learning patterns.

Likewise, serotonin is a neurotransmitter that regulates mood, therefore maintaining motivation and interest in pedagogical and didactic processes is essential, this neuromodulator produces positive brain activation, essential for our happiness, it is activated with exercise physical, recognition bonds, diplomas, and a good space for recreation and social interaction. how do you put it(Guillén CJ 2017) when he affirms that the connection between the body and the brain in learning makes physical exercise has a positive impact on hippocampal functioning, on the release of important neurotransmitters, and on the development of executive functions of the brain which are basic for the academic performance and personal development of the student. Active breaks are necessary to optimize flexible attention and focused thinking to lead the student to the next activity successfully.

These neural changes promote assertive learning and critical and analytical thinking. Brain activities are so important that are achieved with the integration and recognition of the body, corporeality, emotions, and cognition actions that promote the development of concentration and visual-manual-cognitive coordination and in turn allow children to establish patterns of relationship and cognitive algorithms for the development of writing, the recognition of the other, the valuation of peers, the development of their self-esteem and the knowledge and appropriation of the world with a reflective and critical look.

1.1.2. The body as appropriation for the development of cognition.

The foundation of this action research 'Body, cognition and movement' revolves around the body/subject that is constituted from perception, thus, MerleauPonty (1975), affirms that the key elements that constitute perception are cognition, experience, the body, and movement. These processes of subjunctivization in relation to the subject-object and its configuration are the result of multiple experiences that go through the body. "This shows the inexhaustibility of the sense that is born from the relationship established by the subject with the object (interjectively), whose multiple meanings are charged with value, that is, of expressiveness and meaning, since it is always valued and signified in the function of the other and of the others (individuation-trans individuation), from the relations of conflict and difference" (p. 115 Ortiz)

For Eisner, the key is to distinguish between the ideas with which a subject elaborates his thought and the pragmatic action of rethinking a curriculum for contemporary and global life. Thus, Eisner approaches curriculum design as "the process to through which those ideas are transformed by an act of educational imagination" (p. 47).

This perspective leads to an unbiased vision of cognitive processes, which values multiple intelligences and rejects binarism, which brings us closer to a process that is paradigmatically different from educational processes and the curriculum. In this way, intercommunications enable a scenario for an emergency² of the bodies. But what kind of bodies? Le Breton (2002) states that in the West the body operates as an individualization factor since "it becomes the precise border that marks the difference between one man and another" (p. 69); This statement is debatable for Lucerga (2004), who points out:

[...] in the era of hip replacements, silicone, assisted reproductive techniques, and virtual reality, it is almost laughable to defend the notion of a biological body with defined limits and alien to the culture of which it is a part. (p.2)

which means that the corporeality and conscious movement of the subject are necessary conditions for cognitive and motor development; fundamental aspects of life. This means that at a biological level, with specialized tests to work it, the increase can be evidenced in volume in brain regions, for example, it has been proven that the volume of the hippocampus is key to the relationship between aerobic exercise and spatial memory, likewise, the prefrontal cortex intervenes in the relationship between movement and executive functions (flexible attention, working memory, inhibitory control while also mediating the relationship between conscious movement and brain plasticity.

2. Method

2.1 Premise

Intentional movement, recognition of the body, corporeality, and the mind-body connection foster cognitive development from social interaction, which contributes to self-knowledge, the other, and the world interacting with the body and mind enables mental-motor challenges and a whole set of sensory activities that, by building new neurological pathways, contribute to the maturity of mental processes and conscious processes of abstraction, abduction, and higher-level conceptualization in each exercise. consent.

2.2. Cognition, body and conscious movement

This action-participatory research exercise was developed with a population of 25, first-grade boys and girls between six and seven years of age at a public school in Bogotá, Chapinero town, strata 2 and 3 from which a proposal based on movement and the body was designed as a tool for the development of processes cognitive and emotional, bearing in mind

²From the epistemological point of view, the emergence is defined in relation to a model of operation of a system and is given to adequately predict its behavior. (Cariani, 1989).

that conscious movement leads us to the recognition of our self-esteem and the appreciation of our body as a vehicle of expression. This communication with the body generates sensitivity, imagination, creativity, and self-esteem.

The characterization of the boys and girls shows that 65% have previously started their academic life, completing some grade of preschool, so they have some advantages over boys and girls who enter first grade without any prior academic process. 35% of boys and girls began their schooling process in the first grade.

2.3 Information collection instruments

For the methodological development of this document, the following data collection instruments were selected:

The first instrument selected is the focus group, as indicated by (Hernández, S 2020) "The purpose of the focus group technique in research is to obtain information associated with knowledge, attitudes, feelings, social behaviors, beliefs, and experiences, as well as the way in which each person is influenced by another in a group situation". This technique allows a dialogical process between the workshop leaders and the participants since it allows the opportunity to express from their perspectives how their experience was said in a workshop, and what their strengths and weaknesses were; which constitutes a second stage of the investigation: the elaboration of a field diary or log that, in turn, allows to analyze the strengths, weaknesses, and opportunities of the workshop participants as a means to develop the capacity for observation and stimulate reflective thinking. This technique makes it possible to write down and describe all those impressions, and attitudes that are developed in the workshop sessions and thus record the different elements, which are necessary for the analysis of the information. It is a very successful technique as a systematization instrument for the subsequent analysis of the observed for himself, in the next workshops to assertively achieve the learning and recognition of other cognitive and bodily skills that deconstruct neural networks. attitudes that are developed in the workshop sessions and in this way record the different elements that are necessary for the analysis of the information. It is a very successful technique as a systematization instrument for the subsequent analysis of the observed for himself, in the next workshops to assertively achieve the learning and recognition of other cognitive and bodily skills that deconstruct neural networks. attitudes that are developed in the workshop sessions and in this way record the different elements that are necessary for the analysis of the information. It is a very successful technique as a systematization instrument for the subsequent analysis of the observed for himself, in the next workshops to assertively achieve the learning and recognition of other cognitive and bodily skills that deconstruct neural networks.

2.4 Stages of the investigation process:

2.4.1. diagnostic stage

Strategies mediated by multimodal languages; bodily and emotional from spontaneous movement, movement by imitation, transfer, and free exploration. By achieving the execution of the activities of the workshop participants in a collective and cooperative manner, I facilitate the interaction with the group and the previous analysis of the researcher in relation to the relationship of the boys and girls with their bodies, sanctions, movement, and emotions, aspects that allowed them to experience body awareness, recognition of your body and management of your emotions.

2.4.2. experiential stage

Cross-sectional question: how do my movements cross my moods and emotions, with this workshop, the boys and girls were invited to improvise and express the sensations they felt at that moment with their bodies without saying a word. After that, they had to capture with plastic that indicated each body movement.

To finish the workshop participants tried to identify what each participant had embodied and if it was related to their movement.

As a conclusion and closure of this workshop, it was evidenced how intentional movement can achieve cognitive control and recognition of emotions and that spontaneous movement shows the relationship we have unconsciously with our body and cognition, which must be one and the same. not two separate actions, which leads to the affirmation and recognition of our self and the management of emotions at a motor and cognitive level.

3. Results

3.1. Body pattern recognition stage: body awareness.

Transversal question: what is my body? how does it feel? what does it feel? do I want it or do I ignore it?

With this workshop, the boys and girls were invited to identify the motivations and concepts they had of their bodies from silent observation in front of a mirror, then in a photo that a classmate took with his cell phone.

Then they had to identify with a drawing, words, or various art forms the answers to the cross-curricular question.

After that, with the elements of the workshop, they should identify their behavior patterns.

In conclusion, a pragmatic development of strategies was evidenced for the achievement of the development of executive functions where inhibitory control was highlighted, making self-awareness and their relationship with the other and with the world, which configures cognitive empathy, empathy emotional and empathic concern; Fundamental aspects to develop self-control, self-esteem, and leadership of your own life.

3.2. *Development and preparation of motor and cognitive activities*

In this final stage, based on the observation and recognition of the context, various strategies were adopted that prepared the children for the development and readiness of motor and cognitive activities through fine and gross motor development exercises with movements and recognition. of your body, these bodily exercises lead to the development of perception, space and time, thereby achieving space-time location, taking your body as a reference, these directed and focused perceptions build neural pathways that contribute to cognitive development and the relationship with others and the world.

Once several experiences of movement, body, and cognition were developed through games, rounds, the specific reading of the body in front of a mirror and a peer partner, and photos, we proceeded to identify the sensation and emotion by recognizing their body from the infra perspective. personal and transpersonal, which configures a relationship between me, the other, and the world.

These exercises undoubtedly showed their recognition of themselves as bodies that occupy space and their self-esteem. To enrich the cognitive processes of the body and mind, pedagogical strategies were developed to work with puppets and story readings as a motivational axis for meeting with others from social interaction, thus activating the social brain and mirror neurons. These strategies of brain plasticity and recognition of the body allow not only to promote expression, in all its forms but also to enhance their self-esteem and appreciation of others as kinesics and proxemic aspects that strengthen the cognition-movement-culture relationship.

4. Conclusions

The importance of this research confirms the need for a paradigm shift at the institutional level, where emotions and the body are recognized as motors and drivers of life according to Planella (2003) who states that: "...by stating that the physical dimension it does not take center stage when referring to the body, since it is in the symbolic dimension where it is built; This is how it is understood that "It is not just a question of «showing off» the body anatomy, but of letting the symbols that bodies can transmit come to the fore." (p. 193). In such a way that bodily education for human development should involve not only body awareness but also affective and emotional aspects; This invites us to reflect on the body and the new ways of seeing it and projecting it. Of high importance, the research evidenced the increase in participation by the most isolated boys and girls and redirection towards the leadership of children who generally manifested hostile behaviors, which demonstrates the evolution in the preparation process and the cognitive, perceptual, and psychomotor skills.

On the other hand, the workshop participants indicated the personal benefits, since they were able to identify the connection that exists between the physical and the emotional, thus allowing them to have a different look at the work done in the classroom and the emotional state of their students, which promoted meaningful learning.

These body awareness exercises seek to make the participant aware of their presence, generating intra and transpersonal behavioral changes that positively affect their lives and their environment.

The development of cognitive processes, conscious movement, and education are the result of multiple interactions in the search for adequate adjustments to our environment. It is the sources of human experience that allow the cognitive process to be carried out, through the intentional movement in the relationship between subjects/bodies determined and determinants of the reality they live. This is how it becomes necessary to overcome the body-intellect disjunction to adequately enhance the dimensions of the human being through movement. "The conclusion is simple and clear: physical activity is enormously beneficial and should be an important element of the school curriculum,"(Peña, J.R, 2017).

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