IMPACT OF THE SCIENTIFIC METHOD ON THE INTEGRAL DEVELOPMENT OF CHILDREN IN EARLY CHILDHOOD EDUCATION IN OFFICIAL EDUCATIONAL INSTITUTIONS IN MONTERÍA

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Abstract. This research focuses on evaluating the impact of experimentation and exploration practices, typical of the scientific method in the integral development of children in early education in the Official Educational Institutions of Monteria. It adopts a qualitative approach and uses a descriptive methodology that emphasizes reflection and clarification of participants' experiences. The study is based on a qualitative research of the Action Research (I-A) type, with a sample of 219 early education students from the José María Córdoba and Mogambo institutions, located in the urban sector of Montería, Córdoba. Twenty-six students were selected as a sample for the study, considering criteria of permanence, participation and accessibility. Finally, the research includes the creation of didactic units that use ICT tools to facilitate a hybrid, extracurricular and familiar learning environment.

Keywords. Integral development, initial education, hybrid teaching, scientific method, family educational practices.

I.   INTRODUCTION

Early education is a fundamental stage in the formation of children and is a crucial pillar in their integral development. This study focuses on the impact of experimentation and exploration practices, fundamental to the scientific method, in this educational context. This perspective is based on the recognition that, in the first years of life, the educational environment plays a determining role in shaping the cognitive, emotional and social skills that children will carry with them throughout their educational trajectory.

The approach to experimentation and exploration in early education is of utmost importance because it not only nurtures children's innate curiosity, but also promotes the development of essential cognitive and socioemotional skills. The uniqueness of each child, his or her abilities, interests and needs, demands an inclusive education that celebrates cultural, ethnic, linguistic and socioeconomic diversity. This diversity not only enriches the educational environment, but prepares children for stable and respectful participation in an increasingly interconnected and globalized society.

Likewise, this research is positioned within the framework of social and civic responsibility, by addressing relevant topics such as environmental care, gender equality and respect for human rights. This provides children with tools to understand their role as active and conscious citizens, contributing to the formation of generations committed to building a sustainable and equitable future.

For such reason, recognizing "What are the strengths of families, what do they enjoy most about their sons and daughters, what do they consider most important in their education, and understanding the ways in which they relate, their fears, their anxieties and their questions" (MEN, 2017, p. 37)

contributes to teachers strengthening the relationship with the family in favor of the comprehensive development of children.

The fundamental purpose of this research is to revitalize students' interest and strengthen their skills in exploration and experimentation processes, related to reading and comprehension. It seeks to create a stimulating and motivating learning environment that promotes the effective communicative development of students, contributing not only to the promotion of reading comprehension, but also their pragmatic, semantic and syntactic skills. Thus, by enhancing these skills, students are provided with the necessary tools to interpret and analyze texts in a critical and reflective manner.

In conclusion, this article stands as a valuable contribution to the recognition of early education as a determining period in the growth of children. The close collaboration between school and family, together with the valuing of the particularities of each child, promotes an inclusive and respectful educational environment. This article seeks not only to enrich the educational experience of children at this level, but also to highlight the fundamental role of educators in this process.

II.   THEORETICAL FOUNDATIONS

The research design found background research related to the incidence of scientific elements such as reflection and experimentation in early grade education in various universal, national, and local settings. Which begins with an analysis by Mohammad and Ahmad (2019), who developed a study entitled "Preferred Learning Styles of Kindergarten Students from the Perspective of Their Mothers and Teachers". The purpose of which was to identify the desired learning style of preschoolers from the point of view of their mothers and teachers, taking into account changes such as gender, mother's educational level, and educational environment in Al-Balqa Private School.

Jordan Region. This analysis was aimed at deciding whether those students whose learning style was similar to the teacher's educational procedure learn better, or otherwise, whether the infant faces learning problems if his style does not match the educational procedure and thus the degree of learning. achievement will be violated. Therefore, he tries to understand whether learning can become more positive if the teacher's organization includes all visual, auditory or kinesthetic learning styles of the students. Showing in its results the relevance of family support.

Another antecedent of the global environment is postulated by Mora (2016) entitled "When the brain plays with ideas", which offers a theoretical edification related to the perspective of people with social character. Which is genetically given from childhood. However, it is teaching that makes people what they are in each culture. Therefore, teaching should be given from early childhood and with a metacognitive orientation exposed by what Mora defines as "neuroeducation". That is, education based on the brain" (Mora, 2016a, p. 23). He also states, "Play is the disguise that characterizes learning. Since, early childhood is the age in which the brain absorbs and learns sensory and motor information, which is used to execute certain neural circuits of the brain" (Mora, 2016b, p. 23). This theoretical background provides important information for the present research as it demonstrates the various effective pedagogical tactics for early instruction supported by games, art, literature, and environmental research.

At the national level, there is a postgraduate analysis entitled "Diagnosis of the Pedagogical Plan for Early Childhood Care of the INEM Francisco De Paula Santander IED school as a social mediation initiative from the school environment" developed by Blanco (2016) and concludes that pedagogical practice, in its daily exercise, allows children to make decisions, have an idea, participate and that is why the intervention team is interested in developing their sovereignty as the subject's capacity, to reconfigure their reality according to their ideas Ability to study and vote. The plan has a transcendental impact on the purpose of empowering neighbors to reduce segregation and seek greater levels of equality from the first years of life.

In conclusion, exploration and experimentation in the educational process of early education are intertwined with the daily lives of children, who are constantly seeking to test hypotheses and understand their environment. UNESCO emphasizes the importance of creating environments and pedagogical experiences that foster this exploration, play and expression, thus recognizing the uniqueness and diversity of each child. This perspective implies the need to design activities that

take advantage of children's family and social dynamics as starting points for learning, thus promoting meaningful learning. In addition, the current health emergency highlights the importance of everyday life and family interactions as learning contexts, emphasizing the need to integrate these experiences into pedagogical strategies. Indeed, these practices not only foster the integral development of children, but also strengthen the interaction with their families and enhance their educational and developmental empowerment.

In the systematics of this research plan, the basic resources of initial education, the promotion of the links of the daily life of students in transition, the curricular insertion to promote development and learning through a process that is consciously carried out in a systematic, organized and planned manner are mentioned. All guided by a pedagogical knowledge that moves between pedagogical practice and sociocultural theory. Taking into account the peculiarities of the constant development of the authorial capacity inherent in preschool children, who are nurtured by the problematization of situations that awaken and strengthen their passion for finding and proposing alternatives, inviting them to approach from different points of view, and using imagination as a process to find unusual solutions.

Two categories were defined for the study: Active Learning Methodologies, Integral Formation and Initial Education. Framing the topic at hand, students are taught a variety of pedagogical strategies and techniques related to exploration and experimentation and the development of their integral education through the implementation of such processes, punctuating the topic in question. As a result, the classification is shown as follows:

Table 1. Conceptual Categories

Thematic Unit	Category	Subcategories	Statement
Initial Education	**Active learning methodologies**	1. Exploration and experimentation 2. Inquiry 3. Project 4. Living the Experience 5. Evaluate the process	a. Exploration and experimentation foster curiosity and interest in inquiry, facilitating understanding of abstract concepts. b. Permanently evaluate the processes that are being experienced, and decide with them on the course of the project. c. Development of learning to recognize individuality, strengths and characteristics that make students unique. d. Recognize the daily experiences of children as opportunities to explore and give rise to curiosity, as promoters of questions and interests that allow the definition of joint projects between the home environment and the educational environment, to promote development and learning.
	Training Integral	1. Identity 2. Assertive communication 3. Socio-emotional competencies Conflict resolution	a. Propose a general route of integral formation according to the particularities of the group of children and families it accompanies, and taking into account the dynamics of the educational institution. b. Children build their identity in relation to others; they feel loved, and positively value belonging to a family, culture and world.

			c. Children are active communicators of their ideas, feelings, and emotions; they express, imagine, and represent their reality.
	Education Initial	1. Literature 2. Artistic expressions 3. Games 4. Exploration of the environment	a. Organize children's questions that invite action, hypotheses and conjectures. b. Explain the strategies to promote the participation of families throughout the process. Structure the experiences based on literature, artistic expressions, play and exploration of the environment.

Source. Own elaboration

III.   METHODOLOGY

The purpose of this article is to discover an improvement plan that includes teaching and learning strategies related to exploration and experimentation in the field of early education, adapted to the educational and socioemotional needs of students in official educational institutions in the city of Monteria. This study reveals that the development of research of this type can have a significant impact on the improvement and validation of the teaching work, by focusing on teaching and learning strategies that put the student at the center of the educational process permeated by familiar educational practices, in this sense, the following table of methodological synthesis is presented:

Table 2. Methodological route of the research

	Qualitative Approach	
Type/ Scope or design	**Type**	**Design**
	Descriptive	Action Research
Subjects	26 students of Transition Level Initial Education.	
Collection techniques/ Instruments	**Técnica**	**Instrumento**
	Documentary Analysis	Characterization Form
	Participant Observation	Field Diary
	Discussion Group	Registration Matrix - Group F.
	Interview	Semi-structured interview

Source. Own elaboration

This research is based on the critical social paradigm that seeks to account for a particular phenomenon or situation applied to the field of education, but from a sociocultural perspective. It recognizes the importance of analyzing the practices of experimentation and exploration in early education as socially constructed and contextually rooted processes. This implies a reflective perspective that considers the experiences and perspectives of the participants as central elements to understand the impact of these practices on the integral development of children. In view of this

paradigm, Vygotsky's (1978) postulates are considered relevant in that learning is achieved through participation in social activities and the construction of meanings with the help of others. Therefore, in order to approach the field of action and research from this social and constructivist perspective, a qualitative method is employed that allows for an in-depth understanding of the nature of social phenomena, rather than focusing solely on the accumulation of statistical data.

The research approach used in this study is mainly qualitative, with an emphasis on Action Research (AR). This approach involves the active participation of the researcher in the situation studied, with the purpose of understanding and improving educational practice. In addition, the use of ICT tools to facilitate a hybrid learning environment is mentioned, suggesting an orientation towards applied and technological research, in qualitative methodology, the researcher adopts a holistic view by observing the scenario and the people involved. Rather than reducing people, places, or groups to variables, they are considered in their totality. The qualitative researcher examines people within the context of their past experiences and the situations in which they currently find themselves as stated by Berrio (2009).

In this context, the objectives of this research are to recognize the motivations, perceptions, experiences and opinions of the participants involved in the study. It seeks to collect as many details and characteristics as possible related to the situation under study, using as a primary source of information the population and the social environment in which they find themselves, that is, to go to parents, teachers and managers to obtain a deeper understanding of the social study and provide a solid basis for the analysis and interpretation of the data obtained within the framework of training in initial education.
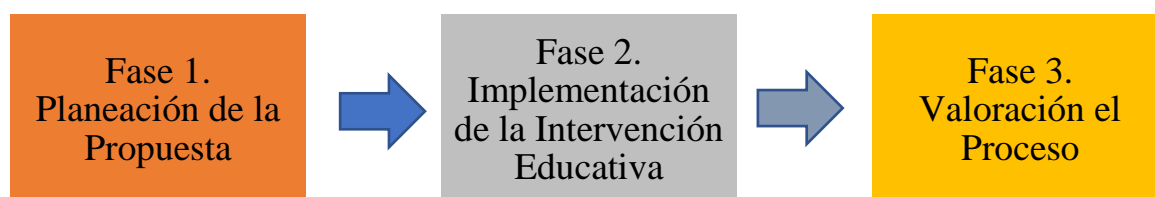
For the development of this research, the descriptive type of research is used, which according to the postulates of Hurtado (2012) refers to the "Diagnosis with the purpose of exposing the event studied, making a detailed enumeration of its characteristics, so that in the results two levels can be obtained; phenomenon and purpose of the researcher" (p. 109).) based on the epistemology of this type of research that provides the result of an activity that places the observer in the world, part of a set of descriptive practices that show the reality of subjects and objects in their naturalness. For this reason, it does not require the formulation of hypotheses.

In other words, it employs a descriptive methodology, oriented towards reflection and clarification of the participants' experiences. This methodology facilitates the collection of detailed data that allow a deep understanding of the processes of experimentation and exploration in the context of early education. In addition, Action Research (A-R) is used as a methodological framework, which implies an active collaboration between researchers, teachers and participants, with the purpose of generating practical knowledge and promoting significant changes in the educational environment.

Action Research is defined as a cyclical research process, aimed at improving processes, characterized by privileging discourse in its interaction and participation in decision-making (Stake, 1999); this leads to understanding it as a process of collective reflection, involving not only the researchers but all members of the educational community, since student evaluation in this case is a matter that directly affects not only the pedagogical processes, but also the evaluators and the evaluated.

The Action Research design (I-A) according to Fernandez (2001) is based on collective analysis and aims to observe whether changes occur in educational practices through concrete actions. This approach is particularly suitable for conducting academic research with any type of population (p.43). In this sense, the I-A model allows the implementation of the investigative processes with the subject unit of study, through the following phases:

SEQ Figure ARABIC 2. I-A Design for Research

| Fase 1. Planeación de la Propuesta | Fase 2. Implementación de la Intervención Educativa | Fase 3. Valoración el Proceso |

Source. Own elaboration

In the figure above, the moments in which the research procedure is carried out from the I-A perspective are addressed based on the procedures proposed by Creswell (2014), which include pre-operational phases such as diagnosis, intervention and assessment (p.57). This cyclical approach is selected because it allows the study of real, academic and institutional situations and processes through immersive work conducted with the student community. It should be noted that the research team specifically selects this student community because of their prior knowledge and contact with, which allows them to understand both their academic strengths and weaknesses and to seek improvements.

This combination of research approach, type and design is coherent and appropriate for the study conducted on the impact of experimentation and exploration practices in early education, since the qualitative approach will allow exploring and understanding in depth the experiences, perspectives and processes involved in this educational context. On the other hand, the descriptive type of research will help to detail and explain the characteristics and dynamics regarding the incidence of experimentation and exploration in the student community and finally, the action research design implies an active and collaborative participation with the participants, which can generate practical knowledge and contribute to significant improvements in the educational environment.

IV.   RESULTS

The credibility of the instruments used in this research was crucial to guarantee the validity and reliability of the data collected. To this end, rigorous validation processes were applied and the approval of highly qualified experts in the educational field was sought.

Two specific instruments stand out: participant observation and the characterization form. Both were subjected to an exhaustive evaluation by experts in educational research project consulting, linked to academic programs at universities in Colombia. These experts, with extensive experience in educational and research processes, thoroughly evaluated the contents of the instruments to ensure that they were adequately aligned with the research objectives.

In addition, we had the valuable contribution of an expert in early childhood education, with vast experience in teaching processes endorsed by the Colombian Ministry of National Education. This additional validation adds a level of depth and relevance to the instruments, especially considering the focus on preschool students.

It is important to note that student participation was completely voluntary and no form of economic or material incentive was offered in exchange for their collaboration. Prior to the application of each instrument, detailed explanations were provided and pertinent doubts were clarified to the students and their guardians. Likewise, their consent was requested through the signing of an authorization form.

The greatest benefit for the research subjects was to guarantee their harmonious transitions from preschool to elementary school. In addition, the students and their families were trained for life through the development of communicative and emotional competencies.

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