PARTICIPATORY EVALUATION OF THE SCHOOL ENVIRONMENTAL PROJECT OF THE MORASURCO MUNICIPAL EDUCATIONAL INSTITUTION IN PASTO.

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Abstract.

School Environmental Projects (PRAE), in the formal education sector, aim to promote actions through the curriculum that address socio-environmental issues in their context by fostering awareness, knowledge building practice , and action within the educational community. This research was conducted to evaluate the contributions of the PRAE "Training of environmental managers for the comprehensive management of solid waste" to the environmental education of students at the Morasurco Educational Institution in Pasto, Colombia. Due to the qualitative nature of this research process, an evaluative research design was adopted. It revealed the relevance and coherence between institutional documents such as the PEI and PMI and classroom activities. The active participation in the design and implementation of the school environmental project fostered environmental awareness regarding the protection of ecosystem services, evidenced by changes in waste management behavior, the acquisition of new knowledge, skills development, and increased self-management. One of the identified weakness was the limited involvement of parents in the project's development, along with a moderate level of commitment from some teachers in their respective disciplines. It is concluded that the PRAE is oriented toward solving the institution's environmental challenges and has the potential to foster interdisciplinary work.

The findings highlight the relevance and coherence among institutional documents such as the PEI and PMI and classroom activities.

Key words: Evaluation, environmental education, relevance, significance, solid waste management.

Resumen.

Los Proyectos Ambientales Escolares (PRAE), desde el sector formal proponen adelantar acciones a través del currículo que permitan superar las problemáticas socio-ambientales del contexto, mediante la sensibilización y concienciación, la construcción de conocimientos y la acción de la comunidad educativa. Esta investigación se adelantó con el fin de evaluar los aportes del PRAE "formación de gestores ambientales para el manejo integral de los residuos sólidos" en la formación ambiental de los estudiantes de la Institución Educativa Morasurco de Pasto, Colombia. Dada la naturaleza cualitativa de esta indagación se optó por una investigación de tipo

EVALUACIÓN PARTICIPATIVA DEL PROYECTO AMBIENTAL ESCOLAR DE LA INSTITUCIÓN EDUCATIVA MUNICIPAL MORASURCO DE PASTO.

evaluativa, donde se encontró pertinencia en la estructura y coherencia entre los documentos institucionales como el PEI y PMI, con las acciones de aula, donde la activa participación en el diseño e implementación del proyecto ambiental escolar, generó seres conscientes de que los servicios ecosistémicos deben protegerse, se pudo evidenciar cambios en el comportamiento referente a la correcta disposición y reutilización de residuos, de igual manera, la incorporación de nuevos conocimientos, el desarrollo de habilidades y autogestión. Una de las debilidades encontradas, es la ausencia de padres de familia en el desarrollo del proyecto, y el aceptable compromiso de algunos docentes desde su área de trabajo. Se concluye, que el PRAE está orientado a la solución institucional de la problemática ambiental, y puede fortalecer el trabajo interdisciplinario.

Palabras Clave: Evaluación, significancia, pertinencia, educación ambiental, residuos sólidos.

I. INTRODUCTION.

Addressing the global environmental crisis requires fundamental changes in how we, as a species, relate to our life -sustaining environment. A transformation in worldview is needed, as Carrizosa (2014, p. 215) suggests, moving from reductionist to complex thinking. It is also crucial to recognize the missteps that have led to ecosystem degradation, in other words, to identify the root causes of socio-environmental problems. This underscores the need for deep solutions: changing the way goods and services are produced within a new cultural framework where consumption supports the common good rather than individual hedonistic well-being (Morin, 1994). Undertaking this transformation requires the emergence of a new kind of citizen, and is where environmental education becomes essential.

Environmental education must contribute to the construction of a renewed sense of citizenship, one grounded in an ethics centered on the well-being of our common home, as emphasized by Pope Francis in his encyclical Laudato Si' (2015).

In this context, it is important to highlight that within the Morasurco community, the high levels of solid waste generation and its improper disposal have significantly affected both institution and the surrounding society. As a result, environmental education emerges as a crucial process that should contribute to improving the region's environmental conditions and fostering a culture of sustainability, beginning with guidance within the family nucleus and be reinforced through the comprehensive education provided by schools.

Accordingly, it is appropriate to evaluate, in a participatory and formative manner, the contribution of these processes within the educational community, using indicators such as impact, relevance, significance, coherence of objectives, and participation in the construction and implementation of the PRAE (Visual Guide for the Policy Evaluation Process based on Carol H. Weiss, 1998).

It is worth noting that no prior research has been found on the evaluation of school environmental projects in the municipality of Pasto, making this study an important contribution in that regard.

Considering the above, this research aimed to evaluate the contributions of the PRAE to the environmental education of students at the Morasurco Municipal Educational Institution in the department of Nariño, Colombia. This was carried out by analyzing the formulation and implementation process of the PRAE "Formación de gestores ambientales para el manejo integral de residuos sólidos," currently in effect at the institution, describing the integration of the environmental dimension into the curriculum of the participating institution, and identifying the most significant contributions of the school environmental project to the development of a new environmental culture.

II. METHODOLOGY.

An interpretative qualitative research approach was adopted, as the study described a real situation within the school context. However, both qualitative and quantitative data collection and analysis techniques were used, resulting in a mixed-methods approach. The study followed an evaluative research design to determine the contributions of the PRAE to students' environmental education at the Morasurco Municipal Educational Institution in the department of Nariño. This evaluation went beyond simple measurement: as proposed by Herrera, J. (2017), it incorporated value judgments agreed upon with the educational community to generate information that could inform and improve curricular and academic processes, as noted by Rivas (2010).

The evaluative research followed key characteristics: it provided relevant information for transforming the school reality and improving the PRAE; the conclusions drawn were actionable and contextually grounded; and the interests and principles of institutional educational projects—mission and vision—were valued through a transdisciplinary process (Scriven, 1994).

The unit of analysis consisted of 208 participants, including teachers, students, and parents. Data was collected through surveys and interviews and analyzed using a categorization process based on recurring themes.

III. RESULTS.

Formulation of the PRAE

Documentary Review of the School Environmental Project (PRAE): to structure a School Environmental Project, a minimum set of conditions must be met as established by decree 1743 of 1994, which outlines guidelines that include conceptualization, contextualization, systematization, and projection, all grounded in in the principles of meaningful learning.

The written document of the environmental project at the Morasurco Educational Institution in Pasto features a social, transdisciplinary, and cross-curricular approach. It emerged from a socio-environmental issue identified through a participatory process, that take into account the specific context and interests of the Morasurco community. This issue was prioritized using the Vester matrix, and the document reflects the participation of a significant percentage of students and teachers who have contributed to its development and design.

It was determined that the project meets the required components, clearly describing the general references, including natural, social, and cultural aspects. It also outlines specific references which the prioritized socio-environmental issue is identified. Furthermore, its basic elements incorporate the integration of environmental education throughout the institution's curriculum.

Its objectives are clearly stated, with achievable and relevant goals for mitigating the identified issue, and environmental education is embedded within the Institutional Educational Project (PEI).

Weaknesses include the absence of a matrix that displays agreements with institutions and specifies the type of collaborations involved. Additionally, it is necessary to appropriately attach to the annexes the records of activities and progress made. The reading of the document does not reflect the actions taken during implementation and fails to adequately demonstrate the work accomplished or the outcomes achieved through its development.

Review of Improvement Plans (PMI): Annexes 2 and 4 under "Management" in the Institutional Culture item consolidate the identification and dissemination of good practices through activities conducted by the various institutional projects, making them known to all members of the educational community. Similarly, under community management, the transversality of institutional pedagogical projects is planned, including the School Environmental Project (PRAE).

Review of the Institutional Educational Project (PEI): The institutional vision sets a short-term goal: to establish itself as a leading institution in environmental education through the integration of the PRAE. Collaborative efforts by all community members have contributed significantly to improving the socio-environmental culture among its stakeholders.

The documentary review made it possible to establish the relationship between academic documents and revealed curricular coherence, which is essential for achieving an integrated vision of what should be taught and assessed (Herman et al., 2007).

"Curricular coherence is a central principle in the context of educational reform in any disciplinary field. Consequently, the analysis presented here enabled effective comparison of existing documents to detect their integrality and shared meaning" (Herman et al., 2007).

Regarding participation in the formulation of the PRAE, in response to the question about the environmental situation or central theme addressed by the PRAE, 90% of secondary students reported knowing or having some idea of the prioritized environmental situation identified in the diagnostic phase. A smaller percentage, 26%, specifically referred to the proper disposal of solid waste. Notably, most of these responses came from 11th-grade students. Very few students indicated unfamiliarity with the PRAE. These findings align with Silva (2018), who noted greater PRAE participation among students in upper secondary education.

Regarding teachers, they were asked: How did the PRAE at Morasurco Municipal Educational Institution originate? The responses were relevant, mentioning the foundational principles used to develop the school environmental project. Teachers referred first to Decree 1743 of 1994 and MEN policy. They also recognize the diagnostic work done with the support of the PIFIL research group from the Universidad de Nariño and emphasize the responsibility to address environmental issues by incorporating mandatory cross-curricular projects.

Similarly, to the question: What is the environmental situation or topic addressed by the institution's school environmental project? 43% of parents mention some implemented activity such as recycling, waste separation, and reforestation—these being the most frequently cited. However, 57% of parents state that they were unaware of the prioritized environmental issue.

Development of the PRAE: To determine participation in the development of the PRAE, primary-level students were asked: Have you recycled at school? 85% of students responded that they had participated in recycling at school. This indicates a high level of student participation. Additionally, students showed a positive disposition when discussing the topic, immediately recognizing the importance of waste separation for protecting and preserving the environment. They also demonstrated conceptual understanding by using appropriate terminology and attempting to replicate what they had learned with their families, reflecting the significance the project has had on them.

Students were also asked to describe an activity developed by the PRAE in which they had participated and that had attracted their attention. 74% mentioned the disposal of solid waste, referring broadly to the socio-environmental issue being addressed. Some students specifically mentioned activities programmed by grade level in the curriculum grids, such as eco-bricks, paper reuse, and vermicomposting—activities that were more frequently cited in the grades where they were specifically implemented.

Regarding the question: Are students' ideas considered in the construction of the PRAE? Sixty-one percent of

students responded that their contributions and ideas were indeed considered, particularly by the teacher leading the PRAE. This highlights an effort to empower students as protagonists and future environmental managers of their community.

As for the environmental component, results indicate that 73% of students know what an environmental problem is, with higher levels of understanding observed among upper-secondary students. These students were able to identify types of socio-environmental problems in their school environment and recognized the importance of protecting the environment and contributing to its care through their daily habits.

Regarding the question Does the IEMM have agreements with private or public institutions that support the resolution of socio-environmental problems?, teachers mentioned existing partnerships with the Corporación Autónoma Regional de Nariño – Corponariño, which was cited by 71% of respondents. The SENA and the Universidad de Nariño followed. Teachers highlighted these institutions' support and guidance on various aspects of environmental education.

Similarly, teachers were asked: Have the didactic materials used in the PRAE been relevant? Please explain. Responses included: "They are relevant because they have generated meaningful learning among students." "They are relevant because students understand and have taken ownership of environmental topics, and awareness has been raised in various subject areas." "They are consistent with the active pedagogical model, encourage student participation, are contextualized, and promote meaningful learning." "They are relevant because they have allowed for participation and exploration." These statements demonstrate that teachers recognize the importance of using diverse didactic resources and their contribution to meaningful learning during PRAE implementation. These insights are closely related to the ideas of Ausubel (1963), who defines meaningful learning as a teaching-learning model based on discovery.

Teachers at IEMM reported that the strategies implemented to provide environmental education have generated spaces for integration through collaborative work and innovative activities led by the PIFIL research group.

Based on this, it was determined that 60% of teachers are well-informed and show willingness and interest in working collectively to improve the school's environmental project.

In contrast, parental involvement in the development of the PRAE is minimal, as 83% of parents reported not having participated in PRAE-related activities. This suggests that the implemented activities have not adequately included parents.

In this regard, the PRAE at Morasurco has a well-structured written document with achievable objectives and clear generalities, aligned with institutional documents. In terms of its design, the document reflects the participation of students and teachers in the diagnostic and prioritization processes related to the socio-environmental issue but does not show the involvement of parents or the broader community.

During the project's implementation, a high level of cooperation and significant effort from most teachers was evident. These teachers are aware of the regulations, regularly attend training sessions, incorporate environmental topics into their lessons, and generally demonstrate interest in the project.

Likewise, students are aware of environmental issues, have acquired new knowledge related to the prioritized issue, understand the importance of protecting ecosystem services, and are motivated to participate in the project. In fact, a group of students has formed the "Gestores ambientales Morasurco" (Morasurco Environmental Managers) to develop future environmental leaders.

However, a key weakness is the limited integration of parents and the Morasurco community. The PRAE faces the challenge of improving collaboration with the community and strengthening relationships with community leaders and local action committees to align efforts based on their perspectives and interests.

This implies a need to improve community ownership of the prioritized socio-environmental issue. This situation is partly explained by parents' demanding work schedules, which make participation difficult. For instance, Parent 1 (PF.1) stated: "I haven't had the opportunity to participate in the PRAE because of work." Similarly, Parent 13 (PF.13) shared: "Not directly, but I help my son with the assignments he gets."

Consistent with the above, in terms of environmental relevance, it was found that the projects worked on have an environmental component recognized by students

and teachers, though not by parents. This suggests that the path taken by the institution is appropriate, but efforts must be made to include both parents and the wider community (Lenis & Arboleda, 2015).

Development of Transversality

Regarding the development of transversality in pedagogical practice, the following question was posed: Why is it important to work on environmental education at the Morasurco Municipal Educational Institution? Responses included: "It considers the territory, comprehensive education, sustainable use, and conservation of natural resources.""It fosters awareness among children and young people in the institution, as well as the conservation and sustainability of the environment." "Environmental culture in the community." "Sustainable use and awareness regarding natural resources." These responses reflect an eco-centric perspective on the environment, highlighting ethical principles, the recognition of an eco-systemic balance between nature and society, and an awareness of the importance of conserving and mitigating impacts on natural resources (Flórez et al., 2019).

Sepúlveda, G. L. (2009) notes the existence of a gap between conceptual advances in environmental education and the practical knowledge involved in environmental educational processes—evidence of a lack of training and professional updating among administrators and teachers.

However, the findings of this study contrast with that assertion, as both the PRAE document and the results of the teacher surveys reflect a strong sense of relevance, preparation, and use of training opportunities to approach environmental issues in an integrated and meaningful way.

According to Paz & Avendaño (2014), environmental education should be understood as a process of cultural construction and transformation, encompassing knowledge, behaviors, beliefs, and more; centered on the rational use and care of all environmental elements to safeguard the conditions necessary for a dignified life. This vision of a dignified life aligns with the paradigm of buen vivir (good living), as opposed to the consumerist-driven notion of well-being that equates individual success as the purpose of life.

By comparing these findings with the curriculum grids designed as a strategy for environmental transversality, it was found that teachers coded as "preschool and primary 1" and "natural sciences " were able to thoroughly describe one of the lessons they had implemented, and their descriptions aligned precisely with what was planned in the curriculum. For grades six and seven, the curriculum grids included: classification of solid waste, microscopic properties of solid waste, and craft projects using paper. One example, described verbatim by the natural sciences teacher at IEMM (2023), is as follows:

"Class: Mixtures – Grade 7. Topic motivation: a video about solid waste pollution. Questions about the video: What is a mixture? What are the types or classifications of mixtures? Enriched knowledge: videos and examples linking the topic (solid waste) with the three Rs: reduce, reuse, recycle. Separation of solid mixtures, methods for separating liquid mixtures. Let's practice: exercises classifying waste, separating it using urgent color-coding methods.

Let's apply it at home: separating solid waste, recycling paper for use in the project. Evaluation: ongoing, including feedback and reinforcement."

For preschool to third grade, the curriculum proposed a general waste information guide across all subjects. For example: in mathematics, counting and sorting solid waste; in natural sciences, raising awareness about waste degradation time; in art, crafts using collected paper, and so on. The following results were provided by a teacher coded as "preschool and primary 1" at IEMM (2023):

"In the birthday project for the children, we worked on environmental awareness by recycling all solid waste to make toys and door decorations. The activity was integrated across all subjects.

In math, we used counting, literacy, and dimensional concepts; in natural sciences, we discussed natural resources; in social studies, personal identity and care; and in art, among others."

There is clear relevance in terms of the content incorporated into classes and the environmental curriculum designed by the institution as a strategy for strengthening environmental education. The topics proposed are coherent with classroom implementation, and the teaching strategies used are innovative and engaging for students. This demonstrates strengths in the integration of the PRAE into the curriculum, although it is not applied by all teachers.

According to Fonseca (2011), a globalized and interdisciplinary curriculum becomes an instrument for

a wide variety of classroom practices, which is especially meaningful when seeking to improve teaching and learning processes.

These results align with those of Silva (2018), who identified strengths in the design and development of PRAEs—specifically, the incorporation of PRAE content into institutional curricula, the promotion of collaborative work among teachers, the use of creative and innovative methodologies, and the beginning of environmental awareness among the student population.

Curricular integration enables the establishment of more flexible and open curricular structures, with learning environments that accommodate cross-cutting themes and promote complex knowledge relationships that result in classroom projects.

Regarding students' perceptions of teacher methodology, the question was posed: Do teachers in different subject areas consistently discuss and provide examples related to solid waste in their classes? The majority of students (55.7%) responded affirmatively, saying that teachers often integrate the environmental issue into their lessons. A smaller percentage (13.4%) said their teachers did not address the topic in their classes.

Another question asked was: Has the education received in different subjects helped you better understand and reflect on the current environmental issue at school (proper solid waste management)? A small percentage (3.8%) said it had not encouraged reflection on proper waste disposal, while the majority (61.7%) affirmed that their teachers had helped them reflect and incorporate new knowledge regarding this issue.

These findings show that about 60% of teachers at Morasurco Educational Institution include environmental education activities in their lesson plans as part of the cross-curricular framework. It is noteworthy that this process does not take place in a dedicated subject; rather, environmental education through the PRAE is conducted in alignment with the goal of improving the identified environmental situation and raising awareness among the educational community about its long-term consequences.

In this regard, Law 1549 of 2012 seeks to strengthen the institutionalization of the national policy on environmental education and its implementation in territorial development. Based on this, the integration of environmental education has been proposed, starting from the diagnosis of local socio-environmental problems and the design of integral and interdisciplinary projects that allow formal institutions to adopt a systemic vision of the environment, enabling understanding of the problem and the implementation of solution-oriented actions to train true environmental managers.

In contrast, Casteblanco (2017) argues that "these activities are not organized, nor are improvement plans established; this is due to a lack of knowledge about the activities in the operational plan, which results in merely activist practices without any impact." This contrasts with the findings at IEMM, where activities are properly planned based on students' grade levels and aligned with the central theme. However, parents do not attend the activities due to their many obligations.

Thus, it is relevant to note that environmental education implies the school's acceptance of its social responsibility toward the educational community, which can only be achieved to the extent that the school opens itself to collaborative work and moves beyond isolated classroom activities to engage with students' social realities and adopt a holistic perspective on current environmental issues (Sepúlveda, 2009).

In this regard, to achieve the purpose of transversality, the willingness of all teachers from their different areas of knowledge is necessary, committed to the project, constantly interacting with the articulating axis through different didactic-pedagogical strategies that foster spaces or mechanisms enabling collaborative work around reflection-action, in all the formative dynamics of the PRAE, which encourage love for the natural and sociocultural heritage of the region (Min Ambiente, 2001).

Contributions of the PRAE

The evaluation criteria were considered in relation to the significance, relevance, and impact of the project throughout its implementation. Regarding this, Luna et al. (2020) affirm that in order to assess the conceptual and knowledge-based developments within institutions—specifically those related to PRAEs—it is essential to deepen monitoring and evaluation processes to ensure they address the real and specific needs of the educational community and its environmental context.
For primary school students, in response to the question: Do you separate the waste generated in your home? The majority, 76%, reported that they do carry out waste separation at home.

When asked: Do you believe that recycling helps improve the environment? all students (100%) responded affirmatively. These findings reflect behavioral changes or improvements among students, the assimilation of new knowledge, and a significant improvement in the prioritized environmental situation. These results highlight the meaningful impact that the PRAE has had on primary students at IEMM in Pasto.

For secondary school students, the question was: Do you apply in your home or community what you learned in class about the correct separation of solid waste? Why? A small percentage (8%) answered that they do not, with 3% stating that their households lack proper waste bins. However, the majority—72%—said they consistently apply what they learned in class. They justified this mainly by their desire to protect the environment, and to a lesser extent to instill new habits in their homes.

In relation to this, most students confirmed that the processes implemented through the PRAE included a participatory component. The activities were relevant and consistent with the prioritized environmental issue, generating significance, that is, students demonstrated the ability and willingness to apply what they had learned independently and with the intention of creating environmentally friendly habits (Naidorf, 2007).

Additional questions were asked: Do you think the PRAE has changed environmental behavior in your surroundings? Over half of the students—57.7%, believed that the PRAE has positively influenced their behavior toward environmental care and protection. A smaller portion—10.6%—felt the project had not impacted their environmental behaviors.

When asked: Do you think the implementation of the PRAE at IEMM helps to raise awareness about the care and conservation of the environment in your community?, the majority—80.7%—said yes. They viewed the PRAE as a tool for fostering awareness and addressing socio-environmental problems in their community. Awareness is understood here as a subcategory of significance, as it represents a path to meaningful environmental learning. While only 3.8% of students did not consider the PRAE a viable alternative for addressing environmental problems.

Significance aims to integrate the cognitive, emotional, affective, and ethical dimensions that emerge in students through holistic education. It relates to the potential to shape future environmental leaders. As Moreno et al. (2017) state: "An active and reflective learning process that holds meaning and significance for the student." Significance determines the capacity to establish relationships between prior and new knowledge.

On the other hand, teachers' perceptions of the PRAE's contributions to student development were examined. When asked: How does the PRAE promote values that help the educational community strengthen environmental ethics?, teachers mentioned: responsible care, sense of belonging, improvement of the environmental situation, environmental values, preservation and conservation of natural resources, environmental ethics, and respect for nature. These responses are consistent with those provided by students, confirming the meaningfulness of the processes led by teachers and facilitators and the relevance of the curriculum grids and the implementation of the PRAE.

Lenis and Arboleda (2015) argue: "Evaluating the relevance of a School Environmental Project implies understanding that teaching must be present as a broad set of conceptual components, habits, skills, and attitudes that span across different subjects, fostering connections between them and promoting a transdisciplinary approach."

We understand relevance as the connection between the conceptual and knowledge constructions developed within institutions—in this case, the PRAE—and the environmental needs identified and prioritized by the educational community. Relevance is social, economic, and cultural, and implies the necessity of changes in educational institutions. These changes are both pedagogical and curricular and aim at new ways of appropriating knowledge (Naidorf et al., 2007).

When asked: From your perspective, how has the PRAE contributed to solving the socio-environmental problems identified in the participatory diagnosis?, the most frequent response—at 41%—was raising awareness and fostering consciousness regarding proper solid waste management. This was followed by the incorporation of new knowledge and noticeable improvement in the environmental situation, at 17%.

With respect to the PRAE's contributions, it can be inferred that the emerging subcategories from the teacher questionnaires included awareness, conceptualization, and attitudes. Together, these contribute to the significance of the PRAE, as students have come to

understand the importance of protecting ecosystem services and adopting environmentally responsible practices and attitudes. Moreover, the project has led to the strengthening and appropriation of environmental knowledge concerning the comprehensive management of solid waste, and to changes in students' behavior and attitudes. The evaluation in this study was based on an analysis of both the documented project and the PRAE's implementation. It was found that the project generated significant contributions among students, who developed environmentally responsible behaviors and adopted values and attitudes that benefit the environment (Silva, 2018). Furthermore, the development of ethical awareness and environmental consciousness was the most notable achievement throughout the project, as this progress was made possible thanks to the support, methodology, commitment, and creativity of certain teachers and environmental facilitators (Silva, 2018). Similarly, the project had a positive impact on teachers, who gradually acquired values, beliefs, attitudes, and environmental behaviors that in turn, they taught, promoted, and co-constructed with students through innovative activities (Silva, 2018).

Nonetheless, despite these positive outcomes, the low participation of parents in PRAE activities was evident. During personal interviews, some parents acknowledged familiarity with the project because meetings—whether academic or informational—included segments devoted to discussing PRAE activities. These meetings also provided opportunities to train parents on the topic being addressed.

Additionally, through their children's verbal interventions and their indirect participation by assisting with assigned tasks, parents were involved in meaningful ways. One parent responded to the question Have you participated in PRAE activities? by saying, "Not directly, but I help my child with what he's assigned."

Considering that 43% of parents are aware of the progress being made at Morasurco to strengthen the PRAE, and in order to verify whether students were transferring their classroom learning to their homes, the following question was asked: Do you separate solid waste at home? All respondents (100%) said yes.

When asked: Where do you dispose of the organic waste generated in your home? the most common response (63%) was composting, with the resulting organic fertilizer used in crops. The second most common response (37%) was feeding organic waste to animals, mainly pigs and cows.

While it was found that parents do separate organic waste, not all of them dispose of it appropriately. Still, the high percentage of those engaging in composting, a practice encouraged by the institution and incorporated into households, represents a viable environmental and productive solution with economic benefits.

To the question: Do you reuse inorganic waste generated at home? Give an example, the most common subcategories included reusing plastics in crafts and collecting plastic, cardboard, and scrap metal for sale. A smaller group did not separate inorganic waste, and a few reported burning it.

These findings show that for various reasons, parents in Morasurco separate inorganic waste, whether for financial benefit or to extend the life of certain items. Nonetheless, there is a clear need to include parents more directly in PRAE development. Some parents interviewed expressed a strong interest to collaborate with the institution and the community to contribute gradually to environmental conservation. One parent suggested: "More projects should be done with children, youth, and parents, going door to door to show how to reuse waste and recycle—so that everyone becomes aware and sets an example in their homes and make a correct disposition of waste so not to harm our planet ."

Another added: "It shouldn't just be for students, but also for parents, because responsibility belongs to everyone. That's why I think it's important to include parents in this environmental awareness effort."

The literature reviewed reflects that neither teachers nor parents typically recognize the School Environmental Project as a tool for diagnosing and solving environmental problems. Instead, it is often seen simply as an academic and administrative requirement (Casteblanco, 2017).

When asked: Since the PRAE was implemented, have you observed behavioral changes in your neighbors or community regarding waste disposal? 60% of parents said yes—changes were noticeable among some community members. Meanwhile, 33% believe everything remained the same. This was evidenced in comments such as: "Yes, I've noticed several changes. People are more careful with nature and more aware to avoid harming water sources." "Yes, because through these talks, one learns. Before,

we would eat and throw things out, but not anymore. Now it's more organized. Before, there was garbage everywhere; now, not so much. We are becoming more aware."

A key weakness in environmental projects is their focus on local issues that can be addressed by educational institutions and their communities through interinstitutional collaboration, often overlooking broader socio-environmental problems (Sepúlveda, G. L., 2009). These results are consistent with this study's findings: the lack of parental involvement turns the intervention into a purely local and intra-institutional matter.

Thus, while the environmental education strategies proposed in the PRAE are aligned with national policy and holistic education goals, they are limited to awareness and care for ecosystem components—falling short of achieving a systemic vision of the environment that addresses problem complexity, local environmental potential, and human impacts on natural and sociocultural systems (Mejía-Cáceres, Andrade & Freire, 2020).

IV. CONCLUSIONS.

This research acknowledges that the PRAE "Formación de gestores ambientales para el manejo integral de los residuos sólidos" at the IEMM, in both its formulation and implementation processes, demonstrates reasonable alignment with current regulations and the curricular guidelines of the Ministerio de Educación Nacional (MEN). Therefore, the project is deemed relevant in its formulation due to the coherence between institutional documents and the PRAE. However, it does not achieve full participatory implementation, primarily due to the low involvement of parents.

Among teachers, there is evidence of awareness of environmental legislation and a clear understanding of the concept of transversality. However, many lack knowledge on how to effectively integrate the environmental component across subject areas. This leads to the use of isolated, unplanned activities that deviate from the intended curriculum grids. Moreover, most of the project's activities are led by the Natural Sciences area and the PRAE leaders, with some teachers only contributing to the implementation of pre-established workshops. As a result, the PRAE lacks true interdisciplinary collaboration.

In terms of students' contributions to the PRAE, a significant impact was identified in approximately 70% of participants. This impact is reflected in the acquisition of new knowledge, increased awareness of the importance of protecting ecosystem resources, environmentally responsible behavior changes, and a better understanding of the identified environmental problem. However, there remains a noticeable absence of a holistic and integrative environmental perspective that could motivate the formation of environmentally responsible individuals.

V. RECOMMENDATIONS.

To ensure that the project is recognized as a meaningful educational experience, it is necessary to:

Seek arrangements that contribute to the final disposal of separated solid waste, particularly inorganic waste. The goal of environmental education is not only to correctly separate waste but also to give it a second life, thereby partially reducing consumerism and helping to create an environmental culture in society.

Improve the transversality process by fostering greater commitment from some teachers. This highlights the need for continued comprehensive guidance to avoid confusion and demotivation.

Involve parents more actively in the PRAE by linking them through the Escuela de Padres (Parents' School), utilizing their presence without disrupting their work schedules.

Another option is to create a committee representing parents, including community leaders, to promote socio-environmental education through collaborative work.

Finally, it is recommended to improve project documentation by including annexes of detailing the activities carried out during the environmental development process. It is also necessary to clarify institutional arrangements through a matrix detailing how each contributes to the project. Incorporate the results of this research into the Proyectos Ciudadanos y Comunitarios de Educación Ambiental – PROCEDAS to enhance societal impact and a broaden outreach.

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