

# ENVIRONMENTAL LEADERSHIP COMPETENCIES IN BASIC AND SECONDARY EDUCATION.

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## Resumen.

**E**nvironmental leadership is a comprehensive educational process that seeks to form students who are aware and active in the care and projection of the environment, a process that is enhanced in playful learning environments in basic and secondary education. This study was carried out with 33 students from the environmental group "Corazón Verde" from the Colegio Sagrado Corazón de Jesús Bethlemitas-Pasto. The environmental leadership competencies that characterize them were identified, which combine skills, knowledge and attitudes regarding the care and preservation of the environment, with the purpose of promoting environmental awareness and responsibility and the resolution of real socio-environmental problems, specific to the school context and decision-making that contribute in a practical way to their solution. The approach of the study is multi-methodological, where quantitative data on leadership skills in the environmental group "Corazón Verde" were analyzed, reflecting on the strengthening of competencies, using a pre-test, a Likert scale and an observation guide was made to collect qualitative information. The results indicate that students have skills such as: "assertive communication, ability to motivate and work in a team, problem-solving skills, proactive attitude, commitment to environmental protection and environmental knowledge." However, it is concluded that these skills are incipient for adequate training in environmental leadership, emphasizing the need to design and execute proposals that strengthen the development of environmental leadership skills aimed at solving environmental problems, integrating environmental education with school play, connecting students with their context and encouraging their active participation in school environmental management.

**Keywords:** Environmental leadership, environmental leadership competencies, environmental education.

## Abstract.

El liderazgo ambiental es un proceso educativo integral, que busca formar estudiantes conscientes y activos en el cuidado y protección del ambiente, proceso que se potencializa en entornos de aprendizaje lúdicos en la educación básica y media. Este estudio se realizó con 33 estudiantes integrantes del grupo ambiental "Corazón verde" del Colegio Sagrado Corazón de Jesús

## COMPETENCIAS DE LIDERAZGO AMBIENTAL EN LA EDUCACIÓN BÁSICA Y SECUNDARIA.

Bethlemitas- Pasto, se identificó las competencias de liderazgo ambiental que los caracteriza, en términos de habilidades, conocimientos y actitudes respecto al cuidado y preservación del ambiente, con el propósito fomentar la conciencia, la responsabilidad ambiental y la resolución de problemas socio-ambientales reales, propios de contexto escolar y la toma de decisiones que aporten de manera práctica a la solución de los mismos. El enfoque del estudio es multimetodológico, donde se analizó datos cuantitativos sobre habilidades de liderazgo en el grupo ambiental "Corazón Verde" reflexionando sobre el fortalecimiento de competencias, aplicando un pre-test, una escala de Likert y una guía de observación. Los resultados indican que los estudiantes poseen competencias como: "comunicación asertiva. capacidad para motivar y trabajar en equipo, habilidades de resolución de problemas, actitud proactiva, compromiso con la protección del medio ambiente y conocimientos ambientales", No obstante, se concluye que estas competencias son incipientes para una formación adecuada en liderazgo ambiental, indicando la necesidad de diseñar y ejecutar propuestas que fortalezcan el desarrollo de las competencias de liderazgo ambiental encaminadas a la resolución de problemas ambientales, integrando la educación ambiental con la lúdica escolar, conectando a los estudiantes con su contexto y fomentando su participación activa en la gestión ambiental escolar.

**Palabras clave:** Liderazgo ambiental, competencias de liderazgo ambiental, educación ambiental escolar.

## I. INTRODUCTION.

The growing environmental crisis facing our planet demands the urgent training of leaders committed to sustainability and the well-being of the environment. In this context, environmental education is established as

a fundamental tool for developing leadership skills that enable new generations not only to understand but also to act in the face of current ecological challenges. As Caraballo et al. (2022) point out, environmental leadership in schools involves not only technical knowledge but also the development of skills and attitudes that foster active and responsible participation in environmental conservation.

Environmental leadership can be understood as a dynamic and transformative process that drives collective action and social transformation toward sustainable practices, promoting essential values such as responsibility, empathy, and respect for the environment (Maureira, 2004; Quiroga, 2020). This type of leadership not only seeks immediate solutions to environmental problems but also aspires to generate profound change in the way communities perceive and relate to their environment. Identifying and strengthening these competencies is vital for promoting critical and proactive awareness in students, who must be able to analyze and manage socio-environmental problems from an ethical, inclusive, and participatory perspective (Gómez & Moncayo, 2022). Furthermore, environmental leadership education fosters the acquisition of scientific knowledge and the ability to motivate others, essential elements for community action, influencing public policy, and building a more sustainable future (Rodríguez, 2002).

In the field of primary and secondary education, the implementation of active and participatory methodologies, such as problem-based learning, interdisciplinary projects, and play-based learning, has been widely recommended to enhance students' environmental leadership skills (Alvarado & García, 2008; Ruiz, 2008). These strategies not only facilitate the internalization of values and skills necessary to address environmental challenges, but also stimulate meaningful learning and promote effective participation in environmental management (Gómez & Moncayo, 2022). Through these methodologies, students develop a sense of shared responsibility, learning to work as a team and to lead initiatives that contribute to the well-being of their community.

At the Sacred Heart of Jesus School, Bethlemitas Pasto, the "Green Heart" environmental group has been formed to raise awareness and train students on environmental issues and promote their leadership skills in this area. This group, comprised of students committed to environmental protection, seeks to

generate a positive impact both within and beyond the educational institution. However, previous studies show that challenges remain in developing effective environmental leaders in school settings, due to the insufficient integration of participatory practices and limited training in social and environmental skills (Maureira, 2004; Quiroga, 2020). Therefore, it is essential to identify and assess students' current competencies and design strategies that strengthen their leadership, promoting concrete actions to protect the environment and contributing to the development of responsible citizens committed to sustainability.

The main objective of this research is to address this problem by identifying environmental leadership competencies among the members of "Corazón Verde" (Green Heart). Once these competencies are identified, the aim is to provide key information for the design and implementation of environmental strategies that will strengthen them. This methodological approach not only seeks to promote meaningful learning but also to empower students to become protagonists of their own educational process, fostering the creation and implementation of solutions to the environmental challenges they face in their immediate context.

This research is expected to generate a significant impact on attitudes toward the environment, cultivating a group of committed leaders who, in turn, will act as agents of change within the educational community and beyond. The goal is to contribute to sustainable development and the formation of a solid environmental culture that transcends the classroom, becoming firmly rooted in the daily lives of all members of the school community. This approach seeks to transform environmental education in schools, ensuring that students not only understand the importance of caring for their environment, but are also prepared to take on the challenges of the current reality, leading and motivating other environmental stakeholders. The aim is to build a generation of conscious young people, capable of making informed decisions and responsibly leading the changes necessary to guarantee a more balanced and sustainable future for all.

## II. METHODOLOGY.

This research focuses on "Environmental Leadership" within the "Green Heart" environmental group at the Sacred Heart of Jesus-Bethlemitas School, using a

multi-method approach. This approach is crucial due to the diversity of the study population, which includes students from different grade levels. According to Ruiz (2008), the multi-method approach combines quantitative and qualitative methods to achieve a comprehensive understanding of complex realities.

The study is framed within the critical-social paradigm, which challenges power dynamics and promotes critical reflection in the teaching of natural and environmental sciences (Gómez & Moncayo, 2022; Alvarado & García, 2008). The Action Research (AR) methodology is employed, which involves a collaborative process where students actively participate in solving environmental problems in their community (Latorre, 2003).

The unit of analysis is the “Green Heart” group, composed of 33 students. Several techniques and instruments were used for data collection: a Likert scale to assess environmental leadership skills, a pre-test questionnaire to measure environmental knowledge, and direct observation to capture interactions and reflections from the teacher’s perspective. Excel was used for quantitative data analysis, while the color-coding technique allowed for qualitative analysis, identifying relevant findings through recurring patterns and specific characteristics.

### III. RESULTS AND DISCUSSION.

This research identified the environmental leadership competencies of the members of the “Green Heart” group in order to understand their current state, their impact on the educational community, and their potential to promote sustainable practices.

The results, collected through a Likert scale, pre-test, and direct observation, indicate that the 33 members of the environmental group possess a set of key competencies that reflect emerging environmental leadership (Table 1). This is based on the group members’ responses to the indicators

for each identified competency, demonstrating that they are good or excellent in some of them.

Likewise, it is important to note that not all competencies are fully developed, since a considerable percentage of members expressed a need to strengthen their environmental leadership competencies, as evidenced by their scores ranging from fair to poor in some of the evaluated indicators.

RESULTADOS: ESCALA LIKER DE COMPETENCIAS DE LIDERAZGO						
COMPETENCIA	INDICADORES	Excelente	Bueno	Regular	Malo	Muy malo
Comunicación Asertiva	Su habilidad para expresar ideas y sentimientos de manera clara y directa es.	8	14	10	1	
	El respeto que tiene por la opinión de los demás, aunque no esté de acuerdo con lo expresado, es	12	18	3		
	Su capacidad de escuchar con atención las opiniones de sus compañeros, es	19	14			
Capacidad para motivar a su equipo	El ánimo que usted fomenta en sus compañeros de equipo para trabajar con entusiasmo en las actividades ambientales, es	6	18	8	1	
	El nivel de participación entre sus compañeros de equipo “Corazón Verde” que usted promueve, es.	3	13	6	10	1
	Su aporte al bienestar y satisfacción en los miembros de su equipo, es.	4	26	1	2	
Capacidad para trabajar en Equipo	Su nivel de colaboración con sus compañeros de equipo, es	13	19	1	1	
	Su compromiso diario con el cuidado del ambiente, es	19	10	4		
Habilidades de Resolución de Problemas	Su habilidad para identificar las causas de los problemas ambientales, es	11	14	8		
	Su habilidad para recopilar y analizar información sobre las problemáticas ambientales de su colegio, es.	10	16	7		
	su capacidad para crear soluciones a favor del ambiente, es	8	16	9		
Actitud Proactiva y compromiso con la protección del Ambiente	La separación de residuos sólidos que usted realiza en su colegio y hogar, es	7	15	10	1	
	El ahorro de agua que usted realiza en su hogar y colegio, es.	10	17	5	1	
	Su empatía y preservación con los recursos naturales, es.	12	18	3		
	Su entusiasmo en la participación de las jornadas ambientales propuestas por la institución, es.	15	12	6		

**Note.** Source this research.

In this way, the results offer insight into how students perceive their capacity to lead in support of the environment, through a description of competencies based on the characteristics and circumstances of the group members.

- Assertive communication is evaluated in three key aspects: the ability to express ideas and feelings, respect for the opinions of others, and listening skills. Students demonstrate mostly positive performance, achieving ratings of “Excellent” and “Good,” reflecting comfort in their communication and a willingness to help. However, a significant number of “Fair” responses suggests that some students need to improve their communication skills, which are crucial for effective leadership.

The teacher, who coordinates the environmental group, observes that although students use appropriate language

and are clear in expressing ideas, they experience embarrassment or fear when sharing their viewpoints due to their limited environmental knowledge. This highlights the need to strengthen assertive communication, which is fundamental for leadership in environmental contexts. According to Mantilla et al. (2003), expressing ideas and respecting opinions are essential skills. The "Green Heart" group has demonstrated an intermediate level of communication skills, indicating significant potential for improvement. It is vital to implement strategies that strengthen these skills, as they are key to personal development and the success of the environmental initiatives they lead.

- Ability to motivate their team: The results indicate that students in the environmental group have difficulty motivating their peers, which negatively impacts teamwork and the effectiveness of environmental projects. Although there are some positive responses, a significant number of students rated their ability to motivate others as "Poor." This is partly due to the presence of new members who are unsure of their abilities.

The group coordinator observes that, while students generally participate enthusiastically, some show apathy and disinterest, which demotivates others, especially the younger ones. According to McGinnis (2009), a leader must offer a clear vision and mobilize collective energies toward a sustainable future. Currently, the ability to motivate the "Green Heart" group is limited, with mixed responses regarding the motivational environment. The arrival of new students without clarity about their skills and the apathy of some members present a significant challenge. It is essential to strengthen the ability to motivate all students to ensure a collaborative environment and increase the success of environmental initiatives.

- The ability to work as a team within the environmental group shows positive results in collaboration and goal achievement, with high scores in "Excellent" and "Good." However, the low rating in "Daily Commitment to Environmental Care" reveals that, although interpersonal skills exist, their practical application in environmental actions is limited for some students.

The coordinating teacher notes that, although there is collaboration on activities with her support, it is not continuous, and competition and individualism are observed among the students. Furthermore, there is a lack of clarity in the objectives and roles, which affects the effectiveness of teamwork.

Rodríguez (2002) highlights the importance of teamwork as a key competency for developing environmental

leaders. Although the group demonstrates valuable skills, it is necessary to improve their daily commitment to the environment. This implies that, while students collaborate on certain activities, they need greater continuity and dedication to apply their learning to environmental actions. To strengthen leadership development, it is crucial to improve teamwork skills, promoting the active participation of all students and fostering a constant commitment to environmental stewardship.

The problem-solving skills of the environmental group show moderate results, with good scores in identifying causes and creating solutions for environmental problems. However, some students feel insecure when identifying problems and proposing solutions, suggesting the need to strengthen education in these areas to empower them to face environmental challenges. The group coordinator points out that, although students identify problems in their environment, the current methodology does not adequately promote problem-solving skills. The lack of student participation in creating solutions stems from the fact that, previously, teachers did not actively involve them.

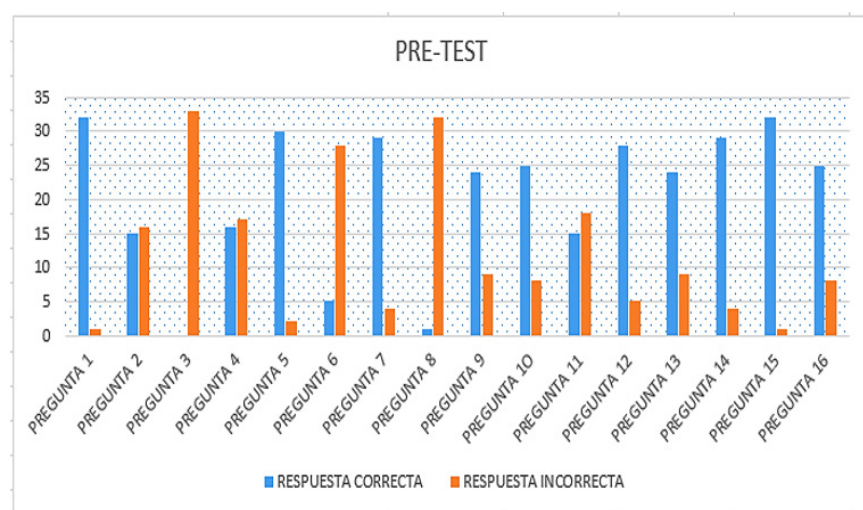
Ortega and Velasco (2006) highlight the importance of these skills in environmental contexts. Although students can identify causes and analyze information, their insecurity in proposing solutions is an area that requires attention. Furthermore, the methodology used thus far has not fostered the comprehensive development of these competencies, limiting student participation in creating effective solutions.

The proactive attitude and commitment to environmental protection shown by students in the "Green Heart" group are primarily rated as "Good" and "Excellent," reflecting that many students practice waste separation and water conservation. However, a significant portion is at a "Fair" level, indicating deficiencies in waste separation, water management, environmental preservation, and participation in environmental initiatives. This suggests a lack of adequate implementation of these essential practices, highlighting the need for education and awareness-raising.

The group coordinator mentions that, while there is a foundation of respect for living beings, it is crucial to improve training in environmental issues, especially water conservation and waste management, to foster greater empathy and a positive impact on the community.

Quiroga (2020) emphasizes the importance of a proactive attitude and environmental commitment as essential

competencies. Although many students demonstrate adequate skills, the portion at a fair level underscores the urgent need to strengthen these competencies. Improving empathy and active participation in environmental activities is fundamental to developing effective leaders. Finally, knowledge of environmental issues was assessed through a Pre-Test to 33 students, covering concepts such as ecosystems, biodiversity, ecosystem services, solid waste, water management and conservation of fauna and flora, the results of which will be analyzed in more detail in Graph 1.



**Note.** Source this Research.

The results obtained offer a clear view of students' understanding of environmental issues. It is concluded that, although most students have a good understanding of what an ecosystem is, the concept of biodiversity is less well understood, indicating a lack of familiarity with the diversity within ecosystems. Regarding ecosystem services, no correct answers were recorded, reflecting a notable lack of knowledge about the benefits that nature provides.

Concepts related to Environmental Education were better understood, but the main objective of this education was poorly understood. Understanding of Solid Waste was deficient, with very few correct answers regarding its definition and classification, highlighting the urgent need for education on this topic. However, Water Management and Conservation showed more positive results, with a widespread recognition of the importance of water and the conservation of flora and fauna.

The most challenging question was about ecosystem services, with no correct answers, followed by the objective of environmental education and the definition of solid waste. This underscores the need for more

comprehensive educational programs to address these deficiencies. Caraballo (2022) emphasizes the importance of environmental education, suggesting that while some basic concepts are understood, there are critical areas where knowledge is insufficient.

Finally, identifying these competencies is crucial for the holistic development of the students in the "Green Heart" group. Implementing educational programs that reinforce these competencies and knowledge is essential, promoting not only academic training but also the personal and social development necessary to face current environmental challenges. This analysis has served as the basis for designing a booklet with a Problem-Based Learning (PBL) strategy, aimed at strengthening the group's environmental competencies and knowledge.

## IV. CONCLUSIONS.

Environmental education is emerging as an essential component in preparing leaders who are genuinely committed to sustainability and collective well-being. This educational process goes beyond simply acquiring technical knowledge, highlighting the need to cultivate critical competencies such as empathy, responsibility, and collaborative action in the face of the complex environmental challenges our society faces. In this context, environmental leadership is defined not only by the ability to identify and understand ecological problems, but also by the skill to mobilize resources, inspire others, and generate significant changes in community environments.

The experience of the "Green Heart" environmental group at the Sacred Heart of Jesus School, Bethlehem Pasto, represents an exemplary effort in integrating environmental education with the development of leadership skills in students. However, the challenges identified, such as the insufficient incorporation of participatory methodologies and the need to consolidate social and environmental skills, demonstrate that there are still areas for improvement to achieve comprehensive and effective training in this field. Therefore, it is imperative that educational institutions not only implement innovative strategies but also conduct ongoing impact assessments, ensuring that students are prepared to lead sustainability initiatives in their communities and beyond.

Similarly, identifying and strengthening specific competencies in students, such as critical analysis, socio-environmental conflict resolution, and the promotion of ethical values, should become priority objectives of educational programs focused on environmental leadership. These competencies not only equip young people to face current challenges but also empower them as agents of change capable of positively influencing both their immediate environments and society at large, fostering a culture of respect and care for the environment.

Finally, this research highlights not only the relevance of environmental education as a tool for social transformation, but also the need to design sustainable strategies that transcend the educational sphere and become integrated into the daily lives of students and their communities. By promoting environmental leadership in new generations, we contribute not only to the development of responsible and conscious citizens, but also to building a more equitable, supportive, and environmentally conscious society. The challenge, then, lies in continuing to refine and adapt educational practices to respond to the complex environmental challenges of the 21st century, ensuring that future generations are fully prepared to lead the change toward a more sustainable world.

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