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## Environmental Training and Awareness as a Key Factor in the University Community's Environmental Perception and Culture

### Capacitación y concienciación ambiental como factor clave en la percepción y cultura ambiental de la comunidad universitaria

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**Abstract:** Environmental training and awareness have become strategic elements for promoting significant changes in attitudes, behaviors, and sustainable practices within higher education institutions. This scientific article aims to analyze the influence of environmental training and awareness programs on the environmental perception and culture of the university community. The research was conducted using a mixed-methods approach—descriptive and documentary—supplemented by surveys administered to students, faculty, and university administrative staff. The results showed that the implementation of environmental education strategies strengthens institutional commitment to sustainability, increases participation in ecological activities, and improves perceptions of collective environmental responsibility. Furthermore, it was found that universities play a fundamental role in educating environmentally responsible citizens through comprehensive educational policies and ongoing awareness programs. It is concluded that environmental training is a determining factor in consolidating a university environmental culture oriented toward sustainable development and the preservation of natural resources.

**Keywords:** environmental education, environmental awareness, environmental culture, environmental perception, university sustainability.

**Resumen:** La capacitación y concienciación ambiental se han convertido en elementos estratégicos para promover cambios significativos en las actitudes, comportamientos y prácticas sostenibles dentro de las instituciones de educación superior. El presente artículo científico tiene como objetivo analizar la influencia de los programas de capacitación y concienciación ambiental en la

percepción y cultura ambiental de la comunidad universitaria. La investigación se desarrolló bajo un enfoque mixto, de tipo descriptivo y documental, complementado con la aplicación de encuestas a estudiantes, docentes y personal administrativo universitario. Los resultados evidenciaron que la implementación de estrategias de formación ambiental fortalece el compromiso institucional hacia la sostenibilidad, incrementa la participación en actividades ecológicas y mejora la percepción sobre la responsabilidad ambiental colectiva. Asimismo, se identificó que las universidades desempeñan un rol fundamental en la formación de ciudadanos ambientalmente responsables mediante políticas educativas integrales y programas permanentes de sensibilización. Se concluye que la capacitación ambiental constituye un factor determinante para consolidar una cultura ambiental universitaria orientada hacia el desarrollo sostenible y la preservación de los recursos naturales.

**Palabras clave:** capacitación ambiental, concienciación ambiental, cultura ambiental, percepción ambiental, sostenibilidad universitaria.

## Introduction

In recent decades, environmental issues have become a top priority for governments, international organizations, and educational systems due to the increase in phenomena associated with climate change, pollution, deforestation, and the deterioration of natural ecosystems. This situation has created a need to promote educational processes geared toward sustainable development, in which environmental education plays a strategic role in fostering ecological awareness and social responsibility among future generations (UNESCO, 2021).

Higher education institutions are fundamental spaces for cultural and social transformation, as they not only generate scientific knowledge but also train professionals capable of influencing society's economic, political, and environmental development. In this context, environmental training and awareness-raising within universities are essential tools for strengthening environmental awareness and promoting responsible behaviors related to sustainability and the conservation of natural resources (Leff, 2019).

University environmental education should be understood as a comprehensive and ongoing process that goes beyond the transmission of theoretical knowledge, incorporating sustainable values, attitudes, and practices into the academic and daily life of the educational community. According to Novo (2018), environmental education should be geared toward fostering an ecologically responsible citizenry

capable of actively participating in solving contemporary environmental problems.

Currently, many universities have implemented sustainability policies, recycling programs, awareness campaigns, and community engagement projects aimed at strengthening the institutional environmental culture. However, limitations still exist due to a lack of participation, insufficient environmental education, and low ecological commitment in certain university sectors. These challenges highlight the need to strengthen environmental training and awareness-raising processes as mechanisms for transforming the environmental perceptions and behaviors of students, faculty, and administrative staff (Martínez & Rodríguez, 2022).

From a social perspective, environmental culture constitutes a set of values, knowledge, habits, and practices that shape people's relationship with their natural environment. Environmental perception, in turn, directly influences individual decisions and actions related to caring for the environment. Therefore, strengthening environmental education in universities contributes significantly to the development of citizens who are critical, reflective, and committed to sustainability (Castro & Molina, 2021).

### **Environmental Education and Sustainability**

Environmental education has emerged in response to the growing global ecological crisis and the need to educate citizens about the importance of protecting the environment. According to UNESCO (2021), environmental education is a process aimed at developing the knowledge, skills, attitudes, and values necessary to act responsibly in the face of current and future environmental problems.

Leff (2019) argues that environmental education should not be limited solely to conveying ecological information but should promote processes of critical reflection on economic and social development models that have negative impacts on the natural environment.

**Table 1.** *Principles of Environmental Education*

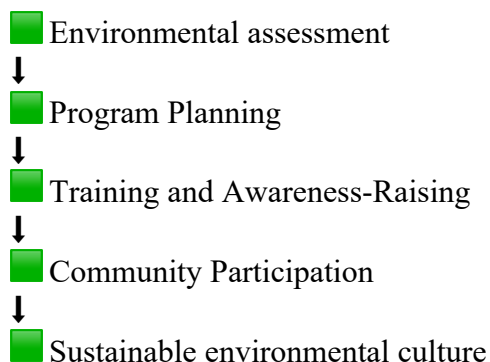
<b>Principle</b>	<b>Description</b>
Holistic Approach	Links social, economic, and environmental aspects
Participation	Promotes citizen involvement
Interdisciplinarity	Integrates various fields of knowledge
Sustainability	Seeks a balance between development and conservation
Critical awareness	Analyze global environmental issues

**Source:** Adapted from UNESCO (2021).

### **University-Level Environmental Education**

Environmental education at the university level encompasses the range of educational activities aimed at strengthening skills, knowledge, and practices related to sustainability.

#### **Figure 1. University environmental education process**



González and Pérez (2020) note that universities play a fundamental role in promoting sustainable habits due to their ability to influence students' professional and ethical development.

## Environmental Awareness and Ecological Behavior

Environmental awareness refers to the level of sensitivity and commitment that people have toward ecological issues. This process involves recognizing the importance of preserving natural resources and adopting responsible behaviors that benefit the environment (Rodríguez & Sánchez, 2021).

**Table 2.** *Environmental Behaviors Promoted in Universities*

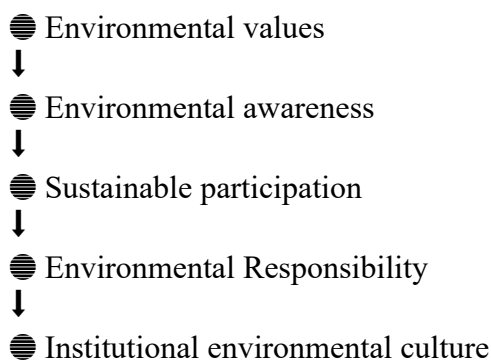
Sustainable behavior	Environmental benefit
Recycling	Reduction of solid waste
Energy savings	Emissions Reduction
Rational water use	Water conservation
Sustainable mobility	Pollution reduction
Reforestation	Ecological restoration

**Source:** Prepared by the author.

## University environmental culture

Environmental culture represents the set of values, habits, attitudes, and practices related to environmental protection within an organization or society.

**Figure 2.** *Components of environmental culture*



Martínez and Rodríguez (2022) note that a strong environmental culture helps strengthen institutional ecological commitment and improve community participation in environmental projects.

### **Environmental Perception in the University Community**

Environmental perception refers to the way in which individuals interpret and evaluate issues related to the environment.

**Table 3.** *Factors Influencing Environmental Perception*

<b>Factors</b>	<b>Impact</b>
Environmental education	Greater ecological knowledge
Institutional participation	Sustainable commitment
Environmental information	Environmental awareness
Personal values	Responsible Behavior
Social Influence	Collective participation

**Source:** Adapted from Castro and Molina (2021).

### **Sustainability and University Social Responsibility**

University sustainability involves integrating environmental, social, and economic principles into academic and institutional management.

**Figure 3.** *Dimensions of university sustainability*

- Sustainable Teaching
- ● Environmental research
- ● Ecological management
- ● Community engagement
- ● Sustainable development

According to Vega (2022), university social responsibility should be geared toward developing projects that contribute to environmental, and social well-being through education, research, and community engagement.

## Methodology

The research was conducted using a mixed-methods approach with a descriptive and documentary scope. Quantitative and qualitative methods were used to analyze the environmental perceptions and culture of the university community.

## Research Design

A structured survey was administered to students, faculty, and university administrative staff, supplemented by a literature review of scientific articles related to education and environmental sustainability.

**Table 4.** *Population and Sample*

Population	Number	Sample
Students	500	150
Teachers	80	40
Administrative staff	40	20
Total	620	210

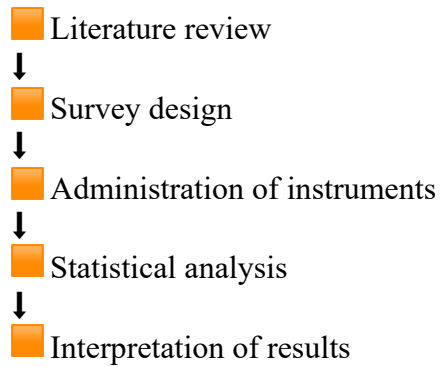
**Source:** Author's own work

## Techniques and Instruments

The techniques used were:

- Structured survey.
- Literature review.
- Participatory observation.

#### Figure 4. Research Methodology Process



#### Results

The results showed that 87% of participants consider environmental education at the university to be important. Additionally, 79% reported having participated in activities related to recycling and sustainability.

**Table 5.** *Level of Environmental Participation on Campus*

<b>Environmental activity</b>	<b>Percentage</b>
Recycling	79%
Environmental campaigns	72%
Environmental talks	85%
Sustainable projects	68%

**Source:** Survey administered to the university community.

The findings are consistent with those of González and Pérez (2020), who argue that environmental awareness activities significantly increase student participation in sustainable initiatives.

### Figure 5. Impact of environmental training

- Ongoing training
- ■ Greater awareness
- ■ Active participation
- ■ Sustainable culture

The discussion establishes that university environmental education should be conceived as a cross-cutting component of academic training. According to Leff (2019), environmental cultural transformation requires ongoing educational processes aimed at social and ecological change.

### Conclusions

Environmental training and awareness are key factors in strengthening the environmental perception and culture of the university community. The results demonstrated that the implementation of environmental education programs increases the level of participation in ecological activities and improves collective environmental responsibility.

Furthermore, it is concluded that universities play a strategic role in promoting sustainable values and in shaping citizens committed to environmental preservation.

The research shows that positive environmental perception is directly related to the frequency and quality of institutionally developed environmental training activities.

Finally, the consolidation of a university environmental culture requires ongoing policies for raising awareness, curricular integration, and community participation geared toward sustainable development.

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