Women in STEM: an Approach From Student's Vocations Through an Environmental Education Program

Mujeres en STEM: una aproximación al estudio de las vocaciones a través de un programa de educación ambiental

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Abstract

This study analyzes the importance of including a gender perspective in environmental education programs, especially in Latin America. It starts from the notion that there is a significant STEM gap related to women's participation in climate and environmental sciences in general. Based on a systematic review of specialized literature, the STEM gap is documented and a broad state of the art on environmental educommunication programs is presented. Then, an analysis of 20 environmental education web programs in 18 Latin American countries is carried out to determine whether their objectives, contents, resources, or human resources make a gender approach visible. Finally, the gender approach developed by the LemonSea Ecuador project is explained. The conclusions point out that the environmental issue requires gender approaches that promote and motivate the massive incorporation of women into scientific studies on climate science due to its importance in this global climate emergency.

Keywords: Gender perspective; Environmental education; environmental programs; STEM.

Resumen

Este estudio analiza la importancia de la inclusión de una perspectiva de género en los programas de educación ambiental, especialmente en Latinoamérica. Se parte de la noción de que existe una importante brecha STEM relacionada con la participación de las mujeres en la ciencia del clima y en las ciencias ambientales en general. A partir de la revisión sistemática de literatura especializada se documenta la brecha STEM, y se presenta un amplio estado del arte sobre programas de educomunicación ambiental. Luego se realiza un análisis de 20 programas web de educación ambiental en 18 países de Latinoámerica encaminado a determinar si sus objetivos, contenidos, recursos o recursos humanos visibilizan un enfoque de género. Finalmente, se explica el enfoque de género desarrollado por el proyecto LemonSea Ecuador. Las conclusiones señalan que los problemas ambientales requieren un enfoque de género que promueva y motive la incorporación masiva de las mujeres a las carreras científicas especialmente hacia la ciencia del clima, un tema importante en esta emergencia climática global.

Palabras clave: Enfoque de género; Educación ambiental; Programas ambientales; STEM.

Sumario

1. Women and Science

Since ancient times science has been colonized by men, being the main actors in the most important discoveries for the development of humanity. When scientific fields are analyzed, it is evident that women have actively participated in discoveries, however, their roles in inventions were ignored for years in different fields. The case of Marie Curie is part of that long tradition of «women in science» who have been largely invisible and whose status as women made social recognition difficult.

According to the Women's Institute 2016[1], women are more attracted to the humanities, social and health sciences, while men are more attracted to areas related to the exact sciences and studies related to technology. In other words, there is greater participation of the male gender in the areas known as STEM (Science, Technology, Engineering, and Mathematics).

Data from recent years shows a high female participation in certain STEM fields; for example, medicine currently has a greater presence of women than

1 INSTITUTO DE LA MUJER Y PARA LA IGUALDAD DE OPORTUNIDADES. Memoria General de Actividades 2016. *Catálogo de publicaciones de la Administración General del Estado* [Online] Madrid: Instituto de la Mujer y para la Igualdad de Oportunidades. 2016 https://acortar.link/x6d2D3

men. However, their presence is still scarce in management bodies linked to medicine and, in general, to any profession[2].

What is the reason for this difference? The choice of a career is determined by different personal preferences. This makes decisions subordinated to different aspects factoring the career choice. In addition to personal factors, social factors related to the context also play a role. In Asian countries, for example, Singapore, Japan, Taipei and Hong Kong, there is a better situation for the development of scientific and mathematical competencies in their students. On the other hand, the Latin American region continues to lag behind[3].

> "The lack of investment in STEM skills development no longer remains only an educational gap that can be overcome with job training but reflects how these countries will be able to cope with the labor needs of the future […] In turn, the lack of attention to current development in STEM areas across their population may become an extra factor that widens the already significant gap between vulnerable groups in the region"[4].

The context in which the individual grows is also an influential point. In an environment with little scientific investment, the person's interest in this field will be small. Another factor that influences career choice is the area where the person lives. For example, in rural areas there is a lack of technological infrastructure compared to the urban context, thus revealing a situation of inequality.

UNESCO stated that the gender gap from education in science, technology, engineering, and mathematics (STEM) is unequal, and endorsed that stereotypes imposed on women are the reasons that limit it[5].

2 SAINZ, Milagros. *Se buscan ingenieras, físicas y tecnólogas: ¿por qué no hay más mujeres STEM?* [Online]. Madrid: Editorial Ariel, 2017. ISBN 978–84–08–17732–6. https://acortar.link/H3B4co

3 SPUTNIK MUNDO. P*rueba PISA refuerza necesidad de invertir en Educación en Latinoamérica* [Online]. Sputnik Mundo. 07/12/2016. https://acortar.link/wT9nVk

4 ARREDONDO, Florina Guadalupe; VAZQUEZ, José Carlos & VELAZQUEZ, Luz María. *STEM y brecha de género en Latinoamérica* [Online]. San Luis Potosí: Revista del Colegio San Luis. 2019, vol. 18, no. 9, p. 142. ISSN 2007–8846. A https://acortar.link/Vpu2jF

5 UNESCO. Cracking the code: girls' and women's education in science, technology, engineering and

In higher education, only 35% of students enrolled in STEM–related careers are women. Today, only 28% of the world's researchers are women. Gender stereotypes and biases compromise the quality of the learning experience for female students and limit their educational options[6].

In Latin America, the percentage of female to male researchers has reached 44%. Out of every 100 researchers, 44 are women. Which is alarming when analyzing the inequality implied by this percentage in the Latin American region[7].

It is now appropriate to focus on the female STEM gap for other factors. For years, the underrepresentation of women in STEM careers has occurred for various reasons, for example, prejudice, discrimination, stereotypes, sexism, supposed inabilities or essentially male scientific structures[8].

Another aspect to consider with respect to the gender gap in STEM is the underrepresentation of women as professors in STEM faculties. According to the study of Dulce–Salcedo, Maldonado y Sánchez[9] in a High School in Bogotá, the likelihood of female students choosing STEM areas in school is directly correlated with the increase of women in the workforce.

A proper understanding of the STEM gender gap implies the need to reflect on the gender stereotypes and roles that influence women's choice of certain careers in college.

mathematics (STEM) [Online]. Paris: UNESCO 2017, 2017. ISBN 978–92–3–100233–5. https://acortar.link/3ftyeq

6 Idem.

7 ARREDONDO ,Florina Guadalupe; VAZQUEZ, José Carlos & VELAZQUEZ, Luz María. Op. cit.

8 Sterling, 1981, cited in MORALES INGA, Sergio & MORALES TRISTÁN, Oswaldo. *¿Por qué hay pocas mujeres científicas? Una revisión de literatura sobre la brecha de género en carreras STEM* [Online] aDResearch ESIC International Journal of Communication Research. March 2020, vol. 22, n.º 22, p. 118–133. ISSN 2340–3144. https://doi.org/10.7263/adresic-022-06.

9 DULCE–SALCEDO, Olga Victoria; MALDONADO, Darío & SÁNCHEZ, Fabio. ¿Influencian mujeres a otras mujeres? El caso de las docentes en áreas STEM en Bogotá. *Serie Documentos de Trabajo* [Online] 60a ed. Bogotá: Universidad de los Andes, Escuela de Gobierno Alberto Lleras Camargo. 2019. ISBN 2215–7816. http://hdl.handle.net/1992/40732

2. Women in science, stereotypes, and social representations

Historically, the role of women in society has been represented by stereotypes, which has determined their entry into the scientific world and the complications they may encounter therein.

Different studies propose three types of explanations: a) psychological explanation: emphasizes the individual's instance and explains the gap in terms of self–concept, self–confidence and self–efficacy, beliefs and perceptions, and differences in interests and preferences; b) sociocultural explanation: emphasizes the importance of culture and explains the gap in terms of the effect of parental influence and socialization, discrimination and bias, stereotypes and gender roles; and, c) biological explanation: emphasizes anatomical sex traits and explains the gap in terms of their impact on gender differences[10].

Ramos[11], analyzed the presence of women scientists in secondary education textbooks and their impact on STEM careers, verifying whether the reason why women do not pursue STEM careers is due to the lack of female referents during compulsory education, resulting in a low female representation that hinders in a negative way the students who see themselves without possible referents in the field of science.

For Master and Meltzoff[12] cultural stereotypes that associate STEM careers with males acts as «barriers» preventing the female gender from being interested in those professions. These stereotypes are adopted in childhood and can influence women's academic attitudes and performance[13].

Access to STEM careers by females is also determined by social representations, i.e., the fact that women are not very close to women scientists from

10 DULCE–SALCEDO, Olga Victoria; MALDONADO, Darío & SÁNCHEZ, Fabio. Op. cit., p. 122

11 RAMOS, Ana María. *Análisis de la presencia de las mujeres científicas en los libros de texto de educación secundaria y su repercusión en las carreras STEM*. [Online]. Trabajo Fin de Máster. Cadiz: Universidad de Cádiz, 2021. https://acortar.link/60tdWw

12 MASTER, Allison & MELTZOFF, Andrew N. *Building bridges between psychological science and education: Cultural stereotypes*, STEM, and equity. [Online]. PROSPECTS. June 2016, vol. 46, n.º 2, p. 215–234. ISSN 1573–9090. Available from: https://doi.org/10.1007/s11125-017-9391-z

13 MORALES INGA, Sergio & MORALES TRISTÁN, Oswaldo. Op. cit., p. 127

their primary education has a great influence on the approach that a woman may have to scientific areas, since these are generally careers in which the male gender predominates.

According to UNESCO, in childhood, children learn and internalize the norms and gender representation of the family, school and community[14]. This social imaginary built early in life will be projected throughout life and will drive women to enter less into STEM areas. The study of Gunderson[15] stated that women are bombarded with socialized ideas and negative stereotypes, especially about women's mediocre mathematics skills.

The results of an investigative work on the influence of some women to others, specifically in the case of STEM teachers in Bogotá, Dulce–Salcedo[16] found that:

> "When students face a ratio of female to male teachers less than one standard deviation, the gender gap in enrollment in STEM programs is 10.8% larger than when they face a ratio of female STEM teachers, greater than one standard deviation.
>
> This research provides quantitative evidence that women do incentivize other women to enter areas where they are underrepresented"[17].

Therefore, the lack of inclusion that girls have when interacting with information technologies (ICTs) is reflected in the gender gap in the development of STEM disciplines, which is a clear gap with respect to boys. But, even when women enter STEM careers, they are fraught with barriers of a sexist nature.

14 UNESCO. Telling SAGA: improving measurement and policies for gender equality in science, technology and innovation. Paris: UNESCO SAGA (STEM 42 and Gender Advancement) working papers. 2018, Vol.5 https://acortar.link/ydaAV7

15 GUNDERSON, Elizabeth A., et al. The role of parents and teachers in the development of gender–related math attitudes. *Sex roles*, 2012, vol. 66, p. 153–166. https://acortar.link/T96rJl

16 DULCE–SALCEDO, Olga Victoria; MALDONADO, Darío & SÁNCHEZ, Fabio. Op. cit.

17 DULCE–SALCEDO, Olga Victoria; MALDONADO, Darío & SÁNCHEZ, Fabio. Op. cit. p. 24.

Referring specifically to the STEM gender gap at university institutions, Hernandez[18] conducted a study on their perceptions as women in STEM and found that many have been subjected to discriminatory acts, that STEM areas require more difficult knowledge than other areas, and that there is a general idea that engineering is a study for men. Research concluded that it is necessary that the transit through the STEM women's career be free of a sexist and hostile environment, since that would make the woman feel uncomfortable and insecure.

> "It is for this reason that higher education institutions who face this challenge require developing policies and strategies to reduce the gender gap in STEM careers, involving the main actors such as: education at all levels, industry and government"[19].

Although some studies have explored topics based on STEM areas, information is scarce, based on the areas and that approach with the students; therefore, this research is unique and highlights an isolated problem, thus contributing to the formation and being the basis for future research.

3. STEM gender gap in the work environment

The gender gap in STEM does not only affect women during their college education. When they enter the workforce, the gap continues to widen. The state–of–the–art research of Reinking[20] reviewed differences studies about STEM gender and concluded that there is not only a gender gap in students'

18 HERNÁNDEZ HERRERA, Claudia Alejandra. *Las mujeres STEM y sus apreciaciones sobre su transitar por la carrera universitaria* [Online]. México: Nova Scientia. August 2021, vol. 13, n.º 27. ISSN 2007–0705. https://acortar.link/ktRd6b

19 CAMACHO, et al. *Construyendo el futuro de Latinoamérica: mujeres en STEM* [Online]. Cartagena de Indias: Asociación Colombiana de Facultades de Ingeniería – ACOFI 2021, 2021.p. 4 https://acortar.link/dHIv3o

20 REINKING, Anni; MARTIN, Barbara. La brecha de género en los campos STEM: Teorías, movimientos e ideas para involucrar a las chicas en entornos STEM. *Journal of New Approaches in Educational Research.* 2018, vol. 7, no 2, p. 160–166. https://acortar.link/N2XrkD

choice of degree programs in higher education, but that this gap also carries over into the workplace.

Ibáñez[21] was able to verify that the professions where women are most active tend to have lower salaries and lower social value.

> "Gender discrimination or bias against women in the labor market, cultural or genetic differences in unobservable factors valued in the labor market for their productivity, and self–selection of women into lower productivity jobs in exchange for certain amenities, such as flexibility, partly as a result of asymmetries in household production"[22].

The world of the media, as a workspace, also shows the gender gap. This gap is more complex in the case of television channels, where technological skills are demanding, and traditionally associated with male journalists. The research of Robles[23] about gender equity in Manabi TV channels concluded that only one of the five television channels of the region has a percentage of more than 50% of women on its payroll, which reflects that the presence of women and men is not equal.

In addition, it found that currently in Manabí there are 22 people working on the boards of directors or as heads of the five main local television channels. Among the 22, only 7 (32%) are women, so men are more than twice as many as women, i.e. 15 (68%). This situation shows a weakness on how women do not have access to the main decision–making positions within companies in the communication sector.

Considering the importance of STEM areas for the development of human

21 IBÁÑEZ, Milagros Sainz. Brechas y sesgos de género en la elección de estudios STEM:¿ Por qué ocurren y cómo actuar para eliminarlas?. *Colección Actualidad (Centro de Estudios Andaluces)*. 2020, no 84, p. 1–22. https://acortar.link/xTD2j1

22 MARCHIONNI, Mariana; GASPARINI, Leonardo Carlos; EDO, María. Brechas de género en América Latina: Un estado de situación. 2018. https://acortar.link/wP3WfB

23 ROBLES, Luis. *Equity and inclusion of women in the professional practice of communication in television media in the province of Manabí.* Tesis de Licenciatura. Manta: Universidad Laica Eloy Alfaro de Manabí, 2020.

life, the question that arises is: Can the society continue to develop science, technology, engineering, and mathematics considering only the male vision?

4. Women and Climate Science

Climate change as a field of knowledge is approached from different STEM disciplines. Hence, one of the factors that should enhance climate science is the reduction of the gender gap. Failure to do so implies leaving a significant portion of the world's population on the sidelines of the priority problem for the survival of the planet: the fight against climate change.

Faced with the world's environmental and climate problems, the WMO (World Meteorological Organization) and the 2030 Agenda committed to «Achieve gender equality and empower all women and girls", thus, incorporating gender issues in its governance, work structures, programs and service delivery, attracting more women to the scientific field and improving their access to technology, information, science education and technology training.

Empowering women, youth and girls is not only about equity, but also about addressing climate challenges, reducing risks and disasters, and sustainable development that builds on the energies and skills that must be fully fostered for growth in science together, men and women, building resilient societies.

Along with this, there are many women within who have set precedents, being current and future leaders for weather, water and climate science, such as: Fiona Tummon, Marisol Osman, Nilay Dogulu, Carolina Vera, Debra Roberts, Daniela Jacob and Elisa Palazzi.

Ensuring that women have equal access to science education and technology is also an essential catalyst for ensuring that developers and users of meteorological, hydrological, and climate services provided by WMO and its Members remain gender–sensitive when serving the global community: women, men, boys, girls[24].

Given the relevance of enhancing the participation of women in STEM

24 LANGENDIJK, Gaby. *Líderes actuales y futuros en la ciencia del tiempo, el agua y el clima. Perspectiva intergeneracional* [Online]. Organización Meteorológica Mundial. 2017, vol. 66, n.º 2, p. 26–32. ISSN 1014–9627. https://acortar.link/3fAiU7

areas, therefore, promoting STEM vocations in female students, it is important to create groups or projects that transmit information, but also generate a space for recognition and change.

In this sense, it should be noted that educators can have an impact on female students through the implementation of educational strategies in their academic planning. According to Reinking y Martin[25], when educators engage female students, they can see the world from multiple perspectives, which could also mean changing stereotypes.

How do you get women involved in STEM? One such way, according to Reinking and Martin[26], is to provide experiences that appeal to them. This is so that female students can become involved in scientific fields and, in addition, contribute to environmental change. In view of the latter, it is also important that environmental projects can have a gender focus.

This is how the gender perspective is incorporated in the research project LEMONSEA ECUADOR, Research, Scientific Dissemination and Educommunication in environmental issues in Ecuador, which is explained as follows.

5. Gender perspective in the LemonSea project

The LemonSea Ecuador project was inspired by its French counterpart LemonSea, created in France in 2014 with a call to transmit messages and educate about environmental issues. LemonSea Ecuador starts in Manta in 2019 and is a research project, which uses research, scientific dissemination and creation of environmental awareness to create agents who are leaders in their communities, from educommunicative strategies.

This research work links two important fields for training: Education and communication. These areas together form a new field, educommunication. Mario Kaplún[27] understands educommunication as: an interdisciplinary and

25 REINKING, Anni; MARTIN, Barbara. La brecha de género en los campos STEM: Teorías, movimientos e ideas para involucrar a las chicas en entornos STEM. *Journal of New Approaches in Educational Research.* 2018, vol. 7, no 2, p. 160–166.

26 Idem.

27 KAPLUN, Mario. *De medios y fines en comunicación educativa.* [Online] Quito: Revista Latinoamericana

transdisciplinary field of study that addresses the theoretical and practical dimensions of two disciplines: education and communication. And together they aim at the development of "ecocitizenship"[28] understood as: the direct relationship with the environment "a conscious, critical, creative and committed citizenship, concerned not only with 'living together' but also with 'living together here'".

From this point, the project focuses on providing the educated groups with channels, networks of interlocutors and the exchange of messages, based on the support of materials such as games, experiments, booklets (physical and digital) that lead to reconstruction, change and leadership.

Within the framework of the research and LemonSea, the link lies precisely in these areas (Science, Technology, Engineering and Mathematics), where the educommunication strategies are intended to create an approach of women and STEM with the students, allowing to provide knowledge from those who have a profile linked to the aforementioned field, such as marine biologists, environmental engineers; producing changes from the perspective of gender, environment, educommunication and research.

This study allows to contribute from different points, encouraging social change, environmental awareness, reconstruction and helping reduce the gender gap from the most important group such as young people, resulting in a new generation of leaders in the most important fields from the problems of the public agenda such as gender and environment.

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de Comunicación. 1997, n.º 58, p. 4–6. https://acortar.link/l6J2oG

28 SAUVÉ, Lucie. *Educación científica y educación ambiental: un cruce fecundo. Enseñanza de las Ciencias.* [Online] Revista de investigación y experiencias didácticas. June 2010, vol. 28, n. º 1, p. 5–18. ISSN 2174–6486. https://acortar.link/izPgR7

6. Gender perspective in Environmental educommunication programs in Latin America

This research has asked what is being done in Latin America to educate about the environment, especially with gender perspective, and whether this topic is a priority in government agendas. The study focuses on a review of environmental educommunication programs and portals in the region to outline the state of the art in this regard.

This analysis was made based on 20 environmental educommunication programs hosted on the web, which correspond to 18 Latin American countries.

Table 1 shows the programs studied.

Table 1. Latin America environmental programs. Own authorship

Country	Program
Colombia	Plan de Educación Ambiental Municipal PEAM Támesis 2020 – 2031
Uruguay	Plan Nacional Ambiental para el desarrollo Sostenible
Ecuador	Tierra de Todos
Perú	Plan Nacional de Educación Ambiental 2017–2022 PLANEA Globe Perú Conciencia ambiental desde la escuela
El Salvador	Programa Nacional de Educación Ambiental Limpiemos El Salvador
Panamá	Programa de Acciones Escolares de Monitoreo Ambiental, Cuenca de río Indio
Argentina	Escuelas Verdes
Bolivia	Programa de Educación Ambiental, Ciencia y Tecnología con Experimentos
Chile	Programa medioambiental para el desarrollo sustentable en establecimientos educacionales de Quilicura: Reciclaje de otro mundo
Honduras	"Escuelas verdes" un modelo para la sostenibilidad
Costa Rica	SONATI Programa de Educación Ambiental
Guatemala	Política Nacional de Educación Ambiental de Guatemala
República	Proyecto de Fortalecimiento de la Capacidad Institucional en el
Dominicana	Manejo Integral de los Residuos Sólidos a Nivel Nacional
Paraguay	Programa de Educación Ambiental
Venezuela	Madre Tierra Educación Ambiental

Cuba	Educación Ambiental Cuba
Nicaragua	Ecoescuela Managua Distrito IV
México	Programa Especial de Educación Ambiental

The interest of this part of the study was related to analyzing the objectives of the environmental education program to determine if the gender perspective was present.

In each case, the general approaches, objectives, contents, resources, and team that develops the program were reviewed. All the programs analyzed adequately comply with the diagnostic stage, which implies that instruments and techniques have been applied to determine the characteristics of the audience the educational program intends to reach. Regarding the goals, it seems that in most cases the efficiency and effectiveness of the programs, as well as the fulfillment of goals, and the contribution of solutions to the community, have been considered.

In respect to the contents and resources used (documents and support materials) it was found that all the programs had exclusive documentation. Sensitive variations were found in relation to the most frequently used media. Seventy percent of the programs frequently use radio, television, press, among others; 30% represented by Uruguay, Ecuador, Panama, Argentina, Guatemala and Venezuela have a different reality and do not use the same media. Regarding the revision and updating of contents, most of the programs investigated maintained a continuous updating processes. This is an aspect of great relevance for a Web site, since the profusion of information that marks the information society has accelerated the obsolescence of information, making its constant renewal essential.

Regarding the personnel responsible for the program, the qualification and level of preparation of the personnel selected for planning and conducting the program was observed. It was verified that all the programs have adequate personnel to carry them forward in terms of academic preparation.

However, none of the programs made reference to gender issues, neither in the purposes of the programs, nor in the contents or the team that carries them out. Therefore, it could be thought that the gender approach is not present in such initiatives.

7. Ecuador, Environment and Law

The Constitution of Ecuador, approved in 2008, has been a pioneer in the continent and in the world for the inclusion of fundamental rights to Nature. Specifically, Chapter Seven is devoted to the Rights of Nature and establishes in Articles 71 to 74 the following rights:

> ".... has the right to integral respect for its existence and the maintenance and regeneration of its vital cycles, structure, functions and evolutionary processes".
>
> "Nature has the right to restoration. This restoration shall be independent of the obligation of the State and natural or legal persons to compensate individuals and collectives that depend on the affected natural systems".
>
> "The State shall apply precautionary and restrictive measures for activities that may lead to the extinction of species, the destruction of ecosystems or the permanent alteration of natural cycles".
>
> "Individuals, communities, peoples and nationalities shall have the right to benefit from the environment and natural wealth that allow them to live well".

The benefit of these articles in protecting the rights of Pacha Mama to exist, persist and be respected is undeniable, however, according to authors such as Whittenmore[29], there is a tremendous difficulty for these norms to be put into practice, especially due to the precariousness and high levels of corruption in the judicial system of the country.

In this context, all educational initiatives that seek to promote reflection on the need to guarantee the rights of nature and promote harmonious coexistence will contribute to the creation of a country that respects the Magna Carta. This is another challenge that can only be met by the inclusion of women in the discussion and decision making on all aspects concerning the rights of nature in Ecuador.

29 WHITTENMORE, Mary. *The Problem of Enforcing Nature's Rights under Ecuador's Constitution: Why the 2008 Environmental Amendments Have No Bite.* Pacific Rim Law & Policy Journal. 2011, vol. 20, no. 3. https://acortar.link/659xFx

8. Conclusions

Environmental science and particularly climate science, like many other fields, has been mostly colonized by men. This gap is considered part of the STEM gap that relegates women to professions related to caring for others and not to doing natural and experimental sciences. Most of the research that was consulted, as well as the environmental education programs that were analyzed in the Latin American region, do not specify an approach or gender perspective that encourages and motivates young women in their interest in environmental sciences. In this context, the LemonSea Ecuador project has considered it strategic that all its educommunication interventions in schools and public spaces be guided by the gender approach to promote STEM vocations in Ecuadorian women.

The conclusions point out that the environmental issue requires gender approaches that promote and motivate the massive incorporation of women into scientific studies on climate science due to its an important topic in this global climate emergency. Ecuador has the privilege of being the first country to enshrine the rights of nature in its constitution. The construction of a society respectful of such rights must be carried out by men and women. The important environmental challenges facing the country require an inclusive approach that guarantees spaces for many ecuadorian women to train and contribute to society as environmental experts.

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