

**SPECIAL ISSUE****Transitions in Science Communication: Continuity and Change****ARTICLE**

Transforming narratives: gender equity struggles in Latin American and Caribbean science museums

Bianca Hipólito de Oliveira , **Alessandra Fernandes Bizerra** 
and **Mirelly de Oliveira Soares** 

Abstract

Science museums are undergoing a transition, expanding their role in science communication to engage with equity and inclusion actively. Although women and gender-diverse individuals constitute a significant proportion of museum audiences, they remain underrepresented in exhibitions and leadership roles. This study examines how science museums can address gender equity. Based on a survey of science museum professionals across Latin America and the Caribbean, we identified respondents reporting gender-focused transformative actions. We conducted a thematic analysis of gender-focused transformative actions. Five key elements were developed: female participation, identity negotiation, disruption of normative gender narratives, historical recovery, and activism. The initiatives demonstrate significant transformative potential but are constrained by persistent challenges. By examining these evolving practices in contexts shaped by both structural inequalities and historical struggles for rights, this study contributes to an understanding of how science museums can act as spaces for social transformation.

Keywords

Women in science; Science centres and museums; Science communication and social justice

Received: 31st August 2025

Accepted: 31st October 2025

Published: 13th July 2026

1 - Context

Science museums are undergoing a transition, expanding their role in science communication to engage with issues of equity and inclusion actively. In Latin America, these institutions reach millions of people annually [Patiño et al., 2017]. However, challenges persist in ensuring equitable access and the inclusion of historically marginalised groups, a pattern observed in museums worldwide, revealing striking contradictions [Feinstein & Meshoulam, 2013; Dawson, 2014; Polino et al., 2024]. While women and gender-diverse individuals constitute a significant proportion of museum audiences [Dahmouche et al., 2023], they remain underrepresented in exhibitions and leadership positions within these institutions.

A recent investigation into science museum audiences in Latin America revealed that, in general, there is no significant difference between the number of women and men visiting science museums. However, they found evident disparities, with women, particularly those from lower socioeconomic backgrounds and with limited educational opportunities, facing greater barriers to visiting such institutions [Polino et al., 2024].

Museums and science itself have historically been constructed from an androcentric perspective, promoting science as a neutral, universal field and the sole bearer of truth [Davignon, 2020; Pérez-Bustos, 2014]. This conception not only consolidated masculinised scientific discourses but also reinforced the predominance of white, heterosexual, high-income and educated men as the protagonists of scientific production and museum narratives [Pérez-Bustos, 2014; Corona & Cadena, 2023].

The normativity of gender, race, and class permeates science communication as a whole, reproduced through stereotyped media narratives and stories that reinforce gendered roles associating care with women and scientific leadership with men [Steinke et al., 2024]. Such representations shape social imaginaries, influencing expectations and credibility attributed to those who produce and communicate science. A recent study conducted in Germany, for example, showed that male avatars generated by artificial intelligence were perceived as more competent to speak about science than female avatars, even when presenting the same content [Baake et al., 2025].

These inequalities are not merely symbolic; they are deeply embedded within the institutional structures of the scientific field. As discussed by Lima [2013] and Dahmouche et al. [2022], based on data from Brazilian National Council for Scientific and Technological Development (CNPq) from 2001 to 2015, gender inequalities operate along two dimensions: vertical, evidenced by the underrepresentation of women in leadership roles, and horizontal, expressed in the segregation that pushes women away from traditionally considered high-prestige fields such as engineering and the physical sciences. Even in disciplines with higher female participation, such as science communication, a process of devaluation persists, resulting in the “ghettoisation”, or marginalisation, of knowledge produced by women [Rasekoala, 2019].

In terms of science participation, according to a United Nations Educational, Scientific and Cultural Organisation (UNESCO) report, Latin America and the Caribbean boast one of the highest proportions of women in science globally (46%) [Bello & Estébanez, 2022]. Nevertheless, in the same region, women also account for a large proportion of unpaid labour [Comissão Econômica para a América Latina e o Caribe (CEPAL), 2024] while

leadership positions and the highest salaries remain concentrated mainly among white men from privileged social classes [Bello & Estébanez, 2022]. This scenario is also compounded by structural violence: the region records some of the world's highest rates of femicide and leads global statistics on the murder of trans individuals.

Paradoxically, this is also a region with strong traditions of resistance, led by women in general, and particularly Black and Indigenous women, including those engaged with science from diverse epistemological standpoints, who challenge Western androcentric models. Notable examples include the struggles of women for territorial, health, and food sovereignty rights [ONU Mujeres, 2020], such as those of Zapatista women in Mexico [Bellamy, 2021], and Amazon Indigenous women from Peru, Ecuador, and Brazil [Isla, 2009; Sempértegui, 2021]. These movements have emerged in response to the extractivist economy, which, as Haesbaert [2021] notes, is widespread across Latin America and constitutes a highly masculinised space, shaped by patriarchal control and the violent exploitation of territories. It was expressed, for example, by 2500 women from over 130 different indigenous peoples representing all regions of Brazil, who gathered in Brasília in August 2019 for the First March of Indigenous Women, in the context of a far-right government:

“As women, leaders, and warriors, creators and protectors of life, we will take a stand and fight against the issues and violations that affront our bodies, our spirits, and our territories. By spreading our seeds, our rituals, our language, we will ensure our existence (...) When we care for our territories, which is naturally part of our culture, we are safeguarding the well-being of the entire planet. The majority of the world's biodiversity is under the stewardship of Indigenous peoples, and thus we contribute to sustaining life on Earth.” [Indigenous Women March, 2019]

This excerpt illustrates one of the many Indigenous epistemologies and struggles, highlighting their engagement in the defence of their culture, territories, and all life around them.

Across the scenario of structural inequalities, historical struggles, and multiple epistemologies, urgent questions arise: how are science museums, through their educational and communicational practices, responding to the call for social transformation? To what extent are they aware of, and actively addressing, gender oppression that has historically shaped both museums and sciences, and that may still be reproduced within them? How are museums located in contexts marked by profound inequalities and epistemic plurality engaging with the challenges of advancing gender equity?

Building on these questions, this research aims to analyse transformative educational and communicational practices addressing gender equity in science museums across Latin America and the Caribbean, identifying their key elements, challenges, and potential to foster inclusion and social transformation.

To broaden and deepen our analysis, we seek to establish connections with critical feminist theoretical perspectives from two Latin American thinkers. In the following section, we present authors whose work informs our analysis.

2 - Critical feminist perspectives for analysing communicational and educational practices

Without claiming to offer an exhaustive discussion, we highlight selected points from the works of Tânia Pérez-Bustos [2010] and Lélia Gonzalez [2020], whose reflections provide valuable lenses to interpret our data.

Pérez-Bustos [2010] articulates critical feminist theories with popular education, problematising the separation between communication and scientific production, including in science museums and centres. For her, both are shaped by worldviews marked by androcentrism and the colonality of knowledge. Inspired by the feminist pedagogy of Kathleen Weiler [1991] and the ideas of Paulo Freire, the author proposes three dimensions through which to challenge dominant structures in science and technology (S&T) popularisation: authority, the epistemological tension between reason/objectivity and experience/subjectivity, and the recognition of differences.

In the dimension of *authority*, she questions the asymmetrical relations between those who communicate or teach science and their audiences, arguing that the supposed neutrality of science masks political, economic and institutional hierarchies and interests. When science presents itself as neutral, it conceals these asymmetries and reinforces its own hierarchical structure. Recognising and subverting such power relations is, for the author, essential.

In the realm of *reason/objectivity versus experience/subjectivity*, Pérez-Bustos warns of the risk of reducing experience to a mere pedagogical resource. On the contrary, she argues that lived experiences, emotions, and both individual and collective biographies should be regarded as legitimate forms of knowledge production. This perspective assigns knowledge a political role, as it acknowledges that different experiences generate distinct ways of understanding and constructing knowledge about the world.

Finally, in the extent of *differences*, the author advocates for a situated epistemology that recognises the multiple forms of exclusion and oppression intersecting gender, race, class, territory, and other social markers. Scientific production or communication from a gender perspective must include how Black, Indigenous, peripheral women, women from rural areas, or those with dissident identities experience structural inequalities in different ways.

This last dimension resonates with Lélia Gonzalez, from whose extensive body of work we draw here the concept of the myth of racial democracy. For González [2020] in a work that compiles her writings from the 1970s to the 1990s, the ideology of legal equality and re-democratisation in Brazil and, in parallel, in Latin America, conceals the historical violence perpetrated against Indigenous peoples, Black populations, and other subalternised groups, sustaining a policy of whitening and exclusion. Such a policy positions whiteness as an ideal to be achieved, silencing Black and Indigenous epistemologies that, though placed in a subordinate position, have been fundamental to the construction of the region.

3 - Methods

This study is part of a broader project that aims to discuss social transformation in S&T museums across Latin America and the Caribbean. To address the proposed objectives, we employed a methodological approach combining questionnaires and interviews. The

questionnaires were designed to investigate educators' and communicators' conceptions, attitudes, values, and transformative actions in society. The interviews aimed to delve deeper into the nuances and contextual aspects of these actions.

The complete study adopts a mixed-methods design. Initially, quantitative data were examined through descriptive analysis, followed by a qualitative reflexive thematic analysis [Braun & Clarke, 2006, 2019].

The questionnaire was structured into three sections: (1) sociodemographic data to characterise participants' profiles; (2) questions regarding participants' acting in science museums; (3) questions on educational and communicational practices with transformative potential and conceptions to explore their understanding of key terms, such as social inclusion, participation, dialogue, and engagement. The instrument was validated through interviews and a pilot study [Bizerra et al., 2023], translated into Portuguese, English, and Spanish, and subsequently distributed via email to 1,287 S&T museums in Latin America and the Caribbean¹ and it was open to responses from May/2023 to March/2024 identified by a previous search, accompanied by consent forms and research ethics information.²

Semi-structured interviews were conducted online,³ each lasting approximately one hour, with educators who had completed the questionnaire and indicated that they implemented transformative actions involving community participation. Thirteen participants were selected with attention to diversity in gender, country and region, museum typology, ethnicity, and conceptions of social participation.

For this paper, we worked with a subset of this data corpus. Regarding the initial questionnaire, we carefully read the answers to three questions:

"Is there any action or project in the museum where you are working that seeks to generate social transformation?"

"Concerning the previous question, we ask you to choose an action that aims at social transformation and briefly write about it."

"What characteristics of this action do you consider fundamental for social transformation?"

Based on the answers to these questions, we identified 20 respondents who explicitly addressed transformative actions from a gender perspective, which is the focus of our analyses in this paper. In response to the second question, respondents were invited to provide a link or document related to the project described. Among these 20 responses to the initial questionnaire, we also obtained one newspaper interview and report, two museum websites, and one Facebook page. This material was subsequently analysed alongside the survey responses.

Among the 13 interviews conducted in the broader project, two were considered in this article, as they involved transformative actions with a gender perspective. The two interviewees were also among the 20 participants who responded to the initial questionnaire and whose answers were selected for this article. The interviews were audio-recorded and transcribed.

1. The complete survey is available this website: <https://pesquisamuseus.ib.usp.br/>.

2. Approved by the local Ethics Committee under protocol no. 61062222700005464.

3. Interviews were conducted from March to May 2025.

3.1 ■ *Qualitative analysis process*

The responses to the three open-ended questions in the aforementioned questionnaire, as well as the interview transcripts, were carefully read and subjected to a reflexive thematic analysis[Braun & Clarke, 2006, 2019]. Initially, we familiarised ourselves with the data through repeated readings of the dataset and noted initial ideas. In the second stage, we systematically generated initial codes across the entire dataset. We then searched for potential themes by collating the codes. These themes were subsequently reviewed and refined in order to be defined and named, highlighting the centrality of what each theme represents in relation to the data. Finally, we composed a text presenting the core themes developed from our dataset as transformative elements of the actions described from a gender perspective. We sought to establish connections with the literature, particularly with the conceptualisations proposed by Pérez-Bustos [2010] and González [2020].

3.2 ■ *Research participants*

In the broader study, a total of 208 adults from 180 S&T museums finished the questionnaire, with an average age of 44.5 years. Most respondents (61.5%) identified as cisgender women, 36.5% as cisgender men, and 1.6% as non-binary. One participant identified as a transvestite.

In terms of nationality, the majority were Brazilian (39.9%), followed by Argentinian (12.2%), Mexican (11.7%), Colombian (10.6%), Peruvian (5.9%), Chilean (5.3%), and Uruguayan (4.3%). Respondents from other countries each accounted for less than 2% of the sample. Most participants held a postgraduate qualification (67.3%). Only two participants reported having a disability.

Regarding ethnicity, the largest proportion identified as white or mixed-race (*pardo*, *criollo*, *mestizo*), and a significant number also identified as Latino, mainly in Spanish-speaking countries. Black and Indigenous people were also represented, albeit in smaller numbers, which does not reflect the overall population of these countries. It is important to note that, as this was a multi-country, multilingual study, this question was left open for respondents to self-identify freely. For accuracy, we opted to describe ethnicity using the exact terms provided by the participants.

In terms of professional roles, most respondents ($n = 119$) reported working in educational positions, particularly as educators or educational coordinators. Additionally, 63 respondents worked in science communication. Respondents in management or technical roles, such as directors ($n = 50$) and museologists ($n = 19$), also participated, many of whom engage directly with the public through educational or communication initiatives. Notably, many respondents reported holding multiple roles within their institutions, indicating significant overlap in responsibilities.

Among the 20 questionnaire responses that addressed gender-related issues as part of transformative actions, 16 respondents identified as cisgender women, one as non-binary, two as cisgender men, and one preferred not to disclose their gender. This distribution underscores the central role that women play in driving gender-related transformative actions in museums. These respondents were from seven different Latin American countries⁴ (Table 1).

4. None of the Caribbean countries reported actions with a focus on gender.

Table 1. Research participants.

Respondent	Institution	Country	Gender	Self-declared ethnicity
R1	Municipal Museum	Argentina	Female, cisgender	Criolla
R2	Science Centre	Colombia	Female, cisgender	Mestiza
R3	Science Centre	Brazil	Female, cisgender	White
R4	Science Centre	Brazil	Female, cisgender	White
R5	Geological Museum	Colombia	Female, cisgender	Latino
R6	Energy Museum	Brazil	Female, cisgender	White
R7	Physics museum	Argentina	Female, cisgender	White
R8	Provincial museum	Argentina	Male, cisgender	White
R9	Chemistry and Pharmacy Museum	Chile	Prefers not to answer	Mestiza
R10	Science Centre	Brazil	Female, cisgender	White
R11	Historical museum	Mexico	Female, cisgender	White
R12	Science Centre	Ecuador	Female, cisgender	Mestiza
R13	Anthropology museum	Ecuador	Female, cisgender	Mestiza
R14	Anthropological site	Mexico	Non-binary	Morena
R15	Science Centre	Brazil	Female, cisgender	White
R16	Science Centre	Argentina	Female, cisgender	White
R17	Ecological Park	Brazil	Female, cisgender	White
R18	Natural History Museum	Bolivia	Female, cisgender	None
R19	Natural History Museum	Bolivia	Female, cisgender	Indigenous
R20	Municipal museum	Ecuador	Male, cisgender	Mestizo

Among these respondents, two women (R2 and R10) were interviewed in greater depth: one from Brazil and one from Colombia. Both work in science centres located in highly urbanised regions near major metropolitan areas (Rio de Janeiro and Bogotá).

To respect the anonymity agreed with the research participants, we refer to them using the letter R followed by the number corresponding to the order in which we received their responses. The quotations from the questionnaires and interviews were originally in

Table 2. Audiences of specific science communication and education practices.

Audiences	Frequency	%
School public	172	84,7
Teachers	126	62
Communities around the museum	107	52,7
Low-income communities	100	49,2
People with disabilities	98	48,2
Women and girls	83	40,9
Older adults	71	34,9
Indigenous / Native Peoples	61	30
Men and boys	51	25,1
Inhabitants of rural areas	43	21,2
LGBTQIA+ population	28	13,8
Traditional communities (caiçara, ribeirinhos, palenqueros)	14	6,9
Quilombolas (organised groups of Afro-descendants)	13	6,4
Immigrant population	13	6,4
People experiencing homelessness	10	4,9
Skin color and specific ethnicities	4	2
Total	994	

Portuguese and Spanish, and all quotations presented have been translated into English by the authors.

4 - Results and discussion

In response to the closed-ended question “In the museum where you work, are there actions for specific publics? Which ones?”, respondents could select one or more groups from a predefined list or add others. Among the groups related to gender were “women and girls”, “LGBTQIA+ public”, and “men and boys”.

A total of 197 mentions of gender-related groups were recorded: 95 references to women and girls, 56 to men and boys, and 45 to the LGBTQIA+ population. As respondents could indicate more than one group, there was overlap in the answers. For instance, 22 respondents selected all three categories, indicating actions aimed at these three social groups.

When examining the proportions relative to other target audiences, Table 2 highlights the relevance of initiatives directed towards these groups, particularly women and girls, who rank fifth among the most frequently cited audiences for specific actions, underscoring the importance of this theme in museum practices. This scenario suggests that museums in the region have sought to address the specific needs of these groups, strengthening dialogue and bringing them closer to science.

Among the respondents, 20 described actions aimed at gender-related group initiatives when asked the open-ended questions. The initiatives include a variety of strategies targeted at these groups (particularly women and girls).

To understand the transformative elements of these practices, both for the participant groups and for the museums themselves, we conducted a reflexivethematic analysis of the responses. From this process, we built five central themes considered transformative: (1) Science as a field of female participation; (2) Disruption of normative gender narratives; (3) Identity construction; (4) Historical recovery; (5) Activism. These themes, which will be discussed in detail in the following sections, are also connected to the critical feminist theories outlined earlier. It is important to note that they are not mutually exclusive: within a single response, one or more themes may be related.

4.1 ■ *Science as a field of female participation*

A first group of responses refers to actions and projects aimed at expanding female participation in science. Some respondents highlight the importance of improving female participation, but do not describe the actions in detail. For instance:

“...in particular, to promote greater access and participation of girls and women in science in order to reduce persistent inequalities.” (R18, R19)

Others, however, provide detailed descriptions. The initiatives often focus on encouraging young girls to develop an interest in science by being inspired by other women scientists, with the ultimate goal of motivating them to pursue scientific careers.

One example comes from R5, which describes a transformative initiative entitled “Telúrica Mujeres”. According to the educator involved:

“It is a space aimed at adolescents and young people (...), with the goal of fostering scientific vocations from a gender perspective. It introduces young people to science, particularly earth sciences and scientific research, as a clear and viable option for academic training and future work, showing how women have been part of the construction of science and how we must continue working towards gender equity in this field.” (R5)

In this project, central emphasis is placed on broadening young women's understanding that science can be a field of opportunity for them, increasing their participation and visibility. To achieve this, the project presents women scientists who have contributed to scientific knowledge, connecting their stories to a vision of a more equitable future in science.

For another educator, increasing female participation in science involves building strong connections with the scientific field while dismantling gender stereotypes. As she explains:

“Chicas en STEM’ is a project that seeks to connect girls with science and build a close relationship with it, through dissemination and active participation. It creates a space for girls’ engagement in science, breaking stereotypes.” (R12)

These initiatives aim to address the gap identified in the sociodemographic data in many countries concerning the underrepresentation of women in science, technology, engineering and math STEM careers and/or in leadership positions. They are aligned with numerous projects and actions worldwide that seek to increase women's participation in these fields, encouraging them to choose scientific careers and discussing the barriers associated with their underrepresentation [Bonus et al., 2022; Law et al., 2021; Price et al., 2019].

Examples such as “Telúrica Mujeres” and “Chicas en STEM”, along with others shared by participants, including “Elementar Caras Amigas” (R15), “Somos Científicas, Queremos Jugar” (R16), “Sonhe como uma Garota” (R17), “Chicas STEM” (R2), “Elas no Ciência Viva” (R6), “Investigación Primeras Tesis” (R9), “Mujeres y Diversidades en Ciencias” (R7), and “Quando Crescer, Quero Ser... Cientista” (R10) and many others actively taking place in the ground of science museums across Latin America and the Caribbean thereby strengthening women's participation in science.

These initiatives form part of a broader network of actions, policies, and grassroots movements involving institutions and women's groups seeking to strengthen and communicate the importance of female participation in science. They challenge dominant representations of science as a male-dominated space and foster a sense of belonging for women.

4.2 ■ *Being a woman and at the same time being a scientist: identity negotiation*

“The Chicas STEAM programme, a training and mentoring process, seeks to enable girls aged 12 to 15 to strengthen their relationship with S&T and to recognise themselves as individuals with the capacity to participate in these fields; recognising their context, developing content and experiences situated in relation to their realities, promoting participation and dialogue, and providing contact with role models (R2).”

“It is a programme subdivided into the areas of STEM, which encompasses the promotion of actions grounded in diversity and gender representation, advocating for political, legal, and social equity between men and women. We believe that this programme can broaden knowledge on how projects developed within the scope of non-formal education can contribute, beyond gender reflections in science, to valuing and fostering a sense of belonging for all in a citizen scientific culture.” (R10).

Representation, belonging, self recognition, situated experiences and the construction of a citizen scientific culture, as reflected in these excerpts from the questionnaire responses, constitute another cluster within our dataset: the identity negotiation. Archer et al. [2016] argue, designing gender-inclusive science communication requires consideration of how to encompass diverse gender performances.

In their analysis of masculinity performances among urban boys during a museum visit, they concluded that the boys engaged with science through hegemonic masculinity performances, such as ‘laddishness’ and ‘muscular intellect’. This suggests that it is not only the representation of male scientists that is privileged in these spaces, but also specific

masculine identities. These findings raise concerns regarding equity in identity representation.

Being a woman or identifying as gender diverse in science therefore often involves negotiating one's feminine identity alongside the identity of being a scientist. Beyond recognising oneself as a scientist through the representativity of other women in science, as described in the previous section, it is also necessary to confront the socially accepted masculine identity that dominates scientific fields.

One example of this negotiation was described by R10 when reflecting in her interview on the challenges of implementing a female participation project. She recounted the experience of a male researcher whose forceful, incisive style of speaking embarrassed a young participant. While colleagues considered this manner of speaking as normal, naturalised within academic environments, for the student it became a source of discomfort. This incident brought to light how such "naturalised" modes of expression, tied to normative masculinities can act as symbolic barriers to women's participation in STEM.

The educator stresses that the programme sought to provide a non-naïve formation: one that presented girls not only with representative women scientists, who strengthen a sense of belonging, but also showing that scientific fields are still deeply marked by gender asymmetries. The aim, she explained, was to prepare the girls, gently, but firmly, with tools to navigate these realities, while also challenging performances of masculinity that are often normalised in the scientific community. This meant supporting the young student to cope with the situation with a group with other women who already have been in similar situations to support her, but also engaging in dialogue with the male researcher, who was encouraged to reflect on his communication style and consider more respectful and inclusive ways of interacting.

This account illustrates how women's participation in science programmes involves a continuous negotiation of identity in the face of masculinities legitimised in science fields. At the same time, it demonstrates that masculinities are neither fixed nor immutable, but can and should be contextualised, questioned, and transformed.

Within this set of responses, identity negotiation emerges as a transformative element in how women built scientific identity through processes of representation and belonging, supported by dialogue with other women scientists [Barakat, 2022; Steinke et al., 2024] and by negotiating their own experiences and contexts [Prieto-Rodriguez et al., 2022] and in how dominant masculine norms within museums themselves can be challenged and potentially reconfigured. These actions are crucial to disrupting entrenched gender stereotypes and cultural invisibility, enabling individuals to see themselves reflected in science and to strengthen their social and cultural connections to it.

4.3 ■ *Disruption of normative gender narratives*

As seen in the previous themes, disruption often appeared through actions that broke stereotypes or challenged male norms and performances. Emphasising the importance of disruption, a third group of responses explicitly focuses on transformative practices aimed at questioning and changing gender roles in both the content and the forms of communication .

For example, two educators highlight the use of gender-sensitive language in exhibitions: “The use of language towards audiences with a gender perspective; broad strategies and training within the institution and with staff on the subject.” (R7)

Similarly, R14 states that beyond adopting gender-sensitive language, the very conception of the collection is informed by this perspective: “the permanent collection is centred on women, with a gender perspective and non-sexist, inclusive language.”

R7 presents its transformative action as fostering reflections on “the gender gap in a field in which the achievements and participation of women and gender-diverse people have historically been rendered invisible.” According to the educator, the action is transformative because it “seeks to deconstruct the image of the people who work in science and at the university.” She also explains that “mediators use humour and kindness, and do not position themselves within a hierarchy of knowledge.” This resonates with Dahmouche et al. [2022], who argue that science museums must confront the invisibility of women and gender-diverse individuals in scientific fields. In doing so, the initiative challenges both the cultural erasure of these groups and the hierarchies traditionally imposed by male-dominated science.

R8 also illustrates this dimension by describing its transformative action as: “Virtual conferences on sexual diversity, particularly on trans people (...), with the aim of giving visibility from a scientific perspective (...) to the history of transsexuality in Europe, America, and Argentina, anchored in the museum’s collections.”

In a newspaper interview shared by R8, he stated that the project: “review heteronormative and patriarchal discourse, also showing other ways of understanding gender (beyond male or female).” Pérez-Bustos [2019] similarly points out that the public visibility of transgender women scientists in science communication destabilises not only societal imaginaries of transgender but also dominant notions of who science is for, how it is produced, and for what purposes.

Disruption, then, becomes a key element in achieving diversity, precisely because it avoids equating gender equality with gender neutrality. As Rasekoala [2019] warns, gender equality cannot mean simply increasing the number of women who participate while expecting them to conform to the same masculine norms of behaviour in order to survive in the field or reach leadership positions. Rather, it requires challenging masculinity as the unquestioned norm and fostering genuinely transformative practices.

In this way, the next set of actions highlights the power of women’s and gender-diverse histories in breaking barriers producing and communicating science.

4.4 ■ *Historical recovery*

In the initiative described in the previous section, aimed at a trans audience, R8 explained:

“We seek for history, the archive, and its collections to be re-signified in order to address themes that traditionally could not be explored. If in recent years we have worked to expose the silencing of women’s roles throughout history and in our collections, the case of trans people is even more serious,” stated (Newspaper interview, R8).

Here, we observe a disruption of normative gender narratives and a movement of historical recovery from a perspective not centred on the masculine. The group of responses that compound this theme highlights transformative efforts to recognise and give visibility to the contributions of women and gender-diverse individuals in science, rewriting science stories from a less androcentric and linear standpoint.

Dahmouche et al. [2022], in their work on exhibitions about women in science, emphasise the importance of disseminating stories led by women, not only as a matter of justice but also to affirm women's achievements in scientific production. They point out that, although women often played active roles in scientific research, they were frequently relegated to secondary positions and received little recognition for their contributions. The authors also note a growing movement in Brazil in which women researchers seek to recover and publicise the histories of other women in science. Such works present alternative versions of scientific history, acknowledging the merit of women who, by breaking the barriers of their time, paved the pathway for many others to advance in the sciences.

In line with these observations, in our data set stories were also used as transformative elements in the sense of open paths for the younger generation of women to walk in science. Coming from R16 which conducts an educational game with children, focusing on the trajectory of four women scientists. In the website shared, we read:

“We worked with two sixth-year classes who participated in ‘Las Cuatro de Melchior’, a game about the first four women to travel to Antarctica. We also screened the first episode of the homonymous animated series and conducted a guided visit to our interactive exhibition ‘Pasatiempo’. Afterwards, the biologist Mercedes Santos shared details about what it is like to experience a scientific expedition in Antarctica.” (R16)

Thus, the initiative rescues the history of these scientists, bringing them into the present and playing with the linearity of time, offering new references for children.

Similarly, with the aim of inspiring girls through the stories of successful scientists, R17 described an exhibition presenting the trajectories of thirteen women who, in various ways, left their mark on society. By revisiting struggles for education, equality, and recognition in male-dominated spaces, the exhibition creates a collective narrative that strengthens the presence of women in contemporary society. It also employs art and playfulness as tools: the stories are set within a circus environment, highlighting the challenges, persistence, and achievements of these women, while simultaneously questioning the way science is traditionally communicated in museums as silent and as the sole truth.

Another noteworthy project is described by R1 developed in partnership with the local council. The initiative aims to recover and preserve local history from a gender perspective while producing heritage communication and educational resources for teachers. According to R1:

“We began the cycle MUJERES X MUJERES, with the goal of highlighting women and diversities considered pioneers in the foundational history of [municipality], through interviews with relatives and friends, a photographic exhibition, and a historical route with QR Codes. This year, we carried out research on the first businesswomen, traders, and artisans who fought for the institutionalisation of the city.”

The impact of this action is remarkable: “Making these women’s roles visible inspired the City Council to name streets after them. The existing archival material, combined with the interviews, allowed us to create educational and accessible resources” (R1).

Beyond this concrete outcome, the collaborative construction of this narrative alongside local women is particularly significant. By revisiting and re-signifying histories, these initiatives break historical silences and create other narratives with other “heroines” for collective memory.

4.5 ■ *Activism*

The Activist initiatives, described by participants of this research aim to denounce structural oppressions and inequalities, give visibility to the struggles of women and gender-diverse communities, support these causes, and work collectively to confront and repair gender-based violence, often in collaboration with organised social movements.

In the R10 project she aims to denounce that “values and characteristics socially attributed to women are undervalued in the production of knowledge, and that gender inequalities permeate the scientific field.” This approach fosters the critical awareness of the project participants, highlighting the non neutrality of science and framing oppression as a starting point for transformation. In another case, R14 described activities focused on human rights and actions to combat gender-based violence, reinforcing the social role of museums.

R20 considered transformative a project involving the collective creation of phrases and banners with different social groups, movements, and organisations. The process consists of meetings with these collectives to discuss key issues, develop a representative phrase, and produce a banner to be displayed on the façade of the museum. According to the educator:

“The fundamental characteristics of this activity for social transformation are, above all, the participation of collectives and groups that have historically been invisible and have not had the opportunity to occupy or take part in cultural spaces for decades. In addition, the dialogues and exchanges generated throughout the process stand out. What amplifies the action is the possibility of giving voice to these groups through a phrase that will occupy a public and symbolic space.” (R20)

The relevance of this gesture is heightened by the fact that the museum is located next to the presidential office, giving the action high political visibility. In a material shared with us, the phrase on the latest banner read:

“Exigimos derechos, justicia, reparación para quienes fuimos perseguidas, para ser nosotrxs mismxs.” (Facebook post, R20)

This banner was created in partnership with a group of trans women campaigning for reparations for their companions persecuted by the State. Its presence on the museum façade represents an active, nonneutral stance, reaffirming the museum as a space of denunciation and resistance, one that amplifies historically marginalised voices by the patriarchy and promotes dialogue in pursuit of justice and reparation.

Building on these elements, activism, together with female participation, identity negotiation, disruption of normative gender narratives, and historical recovery, constitutes a conceptual framework developed through our thematic analysis in the context of science museums across Latin America and the Caribbean. This framework helps us reflect on institutional practices and consider gendered dynamics in museum education and communication. In the following sessions, we will bring it into dialogue with critical feminist perspectives, exploring how they can contribute to museum practices in the region.

5 - Transformative elements in dialogue with female critical perspectives

Pérez-Bustos [2010] problematises the power dynamics between communicators and audiences through the lens of *authority*. In our dataset, we identified moments that disrupt hierarchical relations, for example, when a student influences changes in a researcher’s approach (R10), or when educators, in interviews, express autonomy in relation to the institutional discourse. Thus, the dimension of authority can be associated with the theme of *disruption*, as it involves questioning and challenging hierarchical power relations between science communicators and their audiences.

Pérez-Bustos also emphasises that power relations are shaped by broader contexts, such as the interests of funders, public policies, and sociopolitical conditions. In our data, some actions aimed at increasing female participation are aligned with the proposals of the United Nations (UN) through the Sustainable Development Goals (SDGs), specifically gender equality (SDG 5), and the reduction of inequalities (SDG 10). R17 and R7 explicitly mentioned the SDGs as a direct incentive for developing such initiatives. Other projects are also linked to national or local public policies. Examples include a provincial programme and an interministerial initiative in Buenos Aires bringing together cultural, gender, education, science, and production governmental agencies.

While these incentives are essential for situating such practices within a global framework (as in the case of the UN) and for institutionalising these actions, there is concern that they may respond to external demands in an authoritarian manner. Nonetheless, 19 of the 20 respondents pointed to the lack of funding as one of the greatest challenges in implementing transformative actions, revealing how resource dependency also structures power relations within museums. This underscores the need for such incentives to continue, as without them many initiatives would not be possible. However, it would be desirable for these actions to be situated and developed in dialogue with local contexts.

Situated experiences may be also related to the *reason/objective and experience/subjective* dimension [Pérez-Bustos, 2010]. For example, when R2 states the “exercise of problematising

their [girls] context, of questioning their context, and from there (...) guide their life projects". She is emphasising the subjective aspects of the girls' life histories to build knowledge.

This dimension is also present in the accounts of educators who stress the importance of recognising the oppression faced by women in the sciences. Particularly when it mobilises collective emotions linked to these experiences. In addition, the practice of retelling the life stories of women in science including their oppressions, struggles and everyday achievements, as well as revisiting male-centred narratives from a gender perspective, also challenges the notions of reason and objectivity through which science is often produced and communicated. Therefore, the *reason/objective and experience/subjective dimension* aligns with aspects from *historical recovery* and *identity negotiation*.

Regarding the *differences* in our data, there are few references to intersectionalities. Some of those include the markers of social class, when structured in collaboration with other institutions, such as public schools or NGOs to promote participation of girls and women from lower socio-economic backgrounds, such as R4. Beyond social class markers, R20 and R8 described specific actions involving trans women and R6 stated that the transformative aspect of her project is "(...) the presence of Black women in science, and the fact that it is carried out exclusively in public schools", emphasising the racial marker.

In addition, R13 develops a project with Indigenous women from the Amazon: "to help them maintain their traditions and achieve economic income and empowerment within the family and community. We consider that craftwork is an activity that keeps tradition alive and allows recognition of the role of women within the community" (R13). In this example, ceramic production is recognised as both a technology and a means of strengthening Indigenous women's community economy.

The *differences in* dialogue with González's [2020] concept of the *Myth of Racial Democracy*, helps us critically examine the very theme of *women's participation*, prompting us to question who the women and girls actually taking part in such programmes are, in order to not just advance in increasing white high socioeconomic women participation in science. Based on this concern, and paraphrasing González's [2020] concept, we can argue that there is no true "gender democracy in science" when transformative actions overlook the particularities, contexts, struggles, and ethos of Black, Indigenous, peripheral, and trans women, as well as other intersections or when the figure to aspire to is that of the white male scientist.

This is a cause for concern, as our data show that many actions were directed toward women in science, but only a minority explicitly consider gender diversity, and even fewer address intersectionality. Due to the limitations of our study, we cannot determine whether these aspects are indeed being neglected or simply not mentioned, but it is essential to highlight them to avoid their invisibilisation amidst advances for women in science.

This critique also applies to us directly: the majority of respondents in our research are Latin women, but cisgender, white and highly educated just like the three of us, the researchers who authored this article. In this scenario, and based on these reflections, it is important to acknowledge our own positionalities: the oppressions we face as women in science, but also the distinct oppressions faced by Black, trans, and Indigenous women's bodies. Equally important is the need to question the predominance of whiteness in these spaces and to draw attention to both the presence and absence of Black and Indigenous voices, bodies,

and epistemologies in science communication, despite the richness of such experiences and knowledge across our Latin American and Caribbean territories.

6 - Final considerations

Based on our analysis, we developed five central themes that characterise transformative practices in Latin American science museums: female participation in science, negotiation of identities, disruption of gender narratives, historical recovery, and activism. These themes reflect ongoing transitions in science communication, as institutions respond to demands for greater social engagement, particularly around gender equity in science.

Drawing on Pérez-Bustos and González, we understand these practices as challenges to hegemonic, male-dominated models of science and museums, questioning authority, universality, and claims of objectivity, while also exposing the limits of approaches that increase women's participation without addressing intersections of gender, race, class, and territory.

To advance these transformations, we recommend: adopting intersectional approaches to participation in science, considering how gender interacts with race, class, territory, and other social markers to shape different forms of inclusion and exclusion. Addressing these structures helps to confront the marginalisation of knowledge produced by women and gender-diverse people, whose contributions often remain undervalued or invisible within dominant epistemologies. We also suggest developing situated experiences grounded in diverse life histories, acknowledging, as Pérez-Bustos argues, that experiences, emotions, and biographies are legitimate forms of knowledge production. By valuing local narratives and embodied knowledge, museum education and communication actions can create spaces of belonging that connect personal trajectories to collective histories engaged in transformation. In this process, fostering dialogue between gender identities and scientific identities is relevant to break stereotypes, increasing representation in male-dominated spaces, and encouraging new generations to see themselves as agents of social change. Sharing stories of women and gender-diverse scientists helps to confront invisibility, challenge historical silences, and construct new narratives and collective memories aligned with futures of justice and equity. Finally, building institutional alliances with women's and gender-diverse movements enables museums to learn from different practices of resistance, restoring erased histories and valuing characteristics socially attributed to women and gender-diverse people. These actions, supported by adequate resources, policies, and internal shifts in power dynamics, should be embedded in the production and communication of science, avoiding the reduction of gender equality to gender neutrality and instead, fostering transformations that recognise difference as an important condition of equity.

Our study is limited by its focus on educators and communicators, without including the perspectives of audiences or direct observations of activities. The small sample also restricts broad generalisation. Nonetheless, while grounded in Latin America, these insights resonate globally, offering valuable contributions to science communication transitions when adapted to local contexts.

Ultimately, fostering gender-focused communicative practices in science museums across Latin America and the Caribbean means confronting the internal colonialism that still shapes these institutions. This involves creating spaces for historically silenced voices, bodies, and

epistemologies, always in dialogue with communities, recognising their agency, and enabling their leadership in telling and shaping the stories of science.

Acknowledgments

We would like to thank the Coordination for the Improvement of Higher Education Personnel (CAPES) for the scholarship provided, and the National Council for Scientific and Technological Development (CNPq) for funding the project. We also extend our gratitude to the other members of the project for their valuable contributions and support.

References

- Archer, L., Dawson, E., Seakins, A., DeWitt, J., Godec, S., & Whitby, C. (2016). "I'm being a man here": urban boys' performances of masculinity and engagement with science during a science museum visit. *Journal of the Learning Sciences*, 25(3), 438–485. <https://doi.org/10.1080/10508406.2016.1187147>
- Baake, J., Schmitt, J., & Metag, J. (2025). Balancing realism and trust: AI avatars in science communication. *JCOM*, 24(2), A03. <https://doi.org/10.22323/2.24020203>
- Barakat, R. (2022). Science and representation: examining the role of supplementary STEM education in elementary school student science identity. *SN Social Sciences*, 2(3), 25. <https://doi.org/10.1007/s43545-022-00327-6>
- Bellamy, C. (2021). Insurgency, land rights and feminism: Zapatista women building themselves as political subjects. *Agrarian South: Journal of Political Economy: A triannual Journal of Agrarian South Network and CARES*, 10(1), 86–109. <https://doi.org/10.1177/2277976020987042>
- Bello, A., & Estébanez, M. E. (2022). *Uma equação desequilibrada: aumentar a participação das mulheres na STEM na LAC*. <https://www.britishcouncil.org.br/mulheres-na-ciencia/relatorio-unesco-america-latina>
- Bizerra, A. F., Oliveira, B. H., Kauano, R., Vasconcellos, I. G. M., & Iannini, A. M. N. (2023). *Transformação social e museu de ciências e tecnologia da América Latina e Caribe: o que dizem os profissionais de museus?* RedPop.
- Bonus, J. A., Lynch, T., Nathanson, A., & Watts, J. (2022). Counter-stereotypical, yet Counterproductive? How Families at a Science Museum Respond to Narratives that Defy Gender Stereotypes. *Media Psychology*, 25(3), 469–498. <https://doi.org/10.1080/15213269.2021.1971093>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676x.2019.1628806>
- Comissão Econômica para a América Latina e o Caribe (CEPAL). (2024). *América Latina e o Caribe ante las trampas del desarrollo: transformaciones indispensables y cómo gestionarlas* [LC/SES.40/3-P*]. CEPAL. <https://www.cepal.org/es/publicaciones/80727-america-latina-caribe-trampas-desarrollo-transformaciones-indispensables-como>
- Corona, B. M., & Cadena, M. E. (2023). Problemática de género de mujeres académicas en instituciones de investigación masculinizadas. Estudio de caso. *Revista de Investigaciones Feministas*, 14(1), 25–33. <https://doi.org/10.5209/infe.84033>

- Dahmouche, M. S., Cazelli, S., Studart, D., Guimarães, V. F., & Gruzman, C. (2023). Agora são elas: a presença das mulheres no público de museus de ciência do Rio de Janeiro. *Em Questão*, 29, 125255. <https://doi.org/10.19132/1808-5245.29.125255>
- Dahmouche, M. S., Pinto, S. P., Silva, C. S. d., & Jordão, T. (2022). Exposições sobre mulheres na ciência: divulgação científica e inclusão social de gênero. *Cadernos de Educação Tecnologia e Sociedade*, 15(2), 237–253. <https://doi.org/10.14571/brajets.v15.n2.237-253>
- Davignon, L. I. C. (2020). Gender perspective and museums: gender as a tool in the interpretation of collections. *Museum International*, 72(1-2), 80–91. <https://doi.org/10.1080/13500775.2020.1743059>
- Dawson, E. (2014). “Not designed for us”: how science museums and science centers socially exclude low-income, minority ethnic groups. *Science Education*, 98(6), 981–1008. <https://doi.org/10.1002/sce.21133>
- Feinstein, N. W., & Meshoulam, D. (2013). Science for what public? Addressing equity in American science museums and science centers. *Journal of Research in Science Teaching*, 51(3), 368–394. <https://doi.org/10.1002/tea.21130>
- González, L. (2020). *Por um feminismo afro-latino-americano* (F. Rios & M. Lima, Eds.). Zahar.
- Haesbaert, R. (2021). *Território e descolonialidade: sobre o giro (multi)territorial/de(s)colonial na “América Latina”* (1st ed.). CLACSO; Programa de Pós-Graduação em Geografia, Universidade Federal Fluminense.
- Indigenous Women March. (2019). Marcha das Mulheres Indígenas divulga documento final: “lutar pelos nossos territórios é lutar pelo nosso direito à vida”. *Concelho Indigenismo Missionário CIMI*. <https://cimi.org.br/2019/08/marcha-mulheres-indigenas-documento-final-lutar-pelo-s-nossos-territorios-lutar-pelo-nosso-direito-vida/>
- Isla, A. (2009). The eco-class-race struggles in the Peruvian Amazon basin: an ecofeminist perspective. *Capitalism Nature Socialism*, 20(3), 21–48. <https://doi.org/10.1080/10455750903215720>
- Law, F., McGuire, L., Winterbottom, M., & Rutland, A. (2021). Children’s gender stereotypes in STEM following a one-shot growth mindset intervention in a science museum. *Frontiers in Psychology*, 12, 641695. <https://doi.org/10.3389/fpsyg.2021.641695>
- Lima, B. S. (2013). O labirinto de cristal: as trajetórias das cientistas na Física. *Revista Estudos Feministas*, 21(3), 883–903. <https://doi.org/10.1590/s0104-026x2013000300007>
- ONU Mujeres. (2020). *Informe tierra de mujeres: los derechos de las mujeres rurales a la tierra y los recursos naturales en América Latina*. United Nations.
- Patiño, M. d. L., Padilla, J., & Massarani, L. M. (2017). *Diagnóstico de la divulgación de la ciencia en América Latina: una mirada a la práctica en el campo*. RedPOP.
- Pérez-Bustos, T. (2010). Aportes feministas a la educación popular: entradas para repensar pedagógicamente la popularización de la ciencia y la tecnología. *Educación e Pesquisa*, 36(1), 243–260. <https://doi.org/10.1590/s1517-97022010000100004>
- Pérez-Bustos, T. (2014). *Feminización y pedagogías feministas: museos interactivos, ferias de ciencia y comunidades de software libre en el sur global*. Editorial Pontificia Universidad Javeriana.
- Pérez-Bustos, T. (2019). Questioning the feminization in science communication. *JCOM*, 18(04), C04. <https://doi.org/10.22323/2.18040304>
- Polino, C., Massarani, L., & Dawson, E. (2024). Social inequality determines science museums attendance in Latin America: a quantitative analysis of data from seven countries. *Museum Management and Curatorship*, 40(6), 723–741. <https://doi.org/10.1080/09647775.2024.2357069>

- Price, C. A., Kares, F., Segovia, G., & Loyd, A. B. (2019). Staff matter: gender differences in science, technology, engineering or math (STEM) career interest development in adolescent youth. *Applied Developmental Science*, 23(3), 239–254. <https://doi.org/10.1080/10888691.2017.1398090>
- Prieto-Rodriguez, E., Sincock, K., Berretta, R., Blackmore, K., Todd, J., Wanless, E., Johnson, S., & Giacomini, A. (2022). Investigating the impact of an outreach intervention on girls' STEM identity formation. *International Journal of Gender, Science and Technology*, 14(2), 183–206.
- Rasekoala, E. (2019). The seeming paradox of the need for a feminist agenda for science communication and the notion of science communication as a 'ghetto' of women's over-representation: perspectives, interrogations and nuances from the global south. *JCOM*, 18(04), C07. <https://doi.org/10.22323/2.18040307>
- Sempértegui, A. (2021). Indigenous women's activism, ecofeminism and extractivism: partial connections in the Ecuadorian Amazon. *Politics & Gender*, 17(1), 197–224. <https://doi.org/10.1017/s1743923x19000023>
- Steinke, J., Coletti, A., & Gilbert, C. (2024). #WomenInSTEM: exploring self-presentation of identity on Instagram. *JCOM*, 23(01), A03. <https://doi.org/10.22323/2.23010203>
- Weiler, K. (1991). Freire and a feminist pedagogy of difference. *Harvard Educational Review*, 61(4), 449–475. <https://doi.org/10.17763/haer.61.4.a102265jl68rju84>

About the authors

Bianca Hipólito de Oliveira is a PhD candidate in a joint doctoral programme in Science Education and Communication between the University of São Paulo (Brazil) and the University of Groningen (The Netherlands). Her research focuses on participation and social transformation in science museums.

✉ biancaholiveira@usp.br

Alessandra Fernandes Bizerra is a professor in the Zoology Department of Bioscience Institute at University of São Paulo. She has experience in the field of Education, working mainly on the following topics: informal education, science communication, science learning and teaching, and teacher education, with special interest in participatory process in communication and education in science.

✉ alebizerra@usp.br

Mirelly de Oliveira Soares: Master's student in the Interunit Graduate Program in Science Education at the University of São Paulo (USP). Holds both a Bachelor's degree and a Teaching Degree in Biological Sciences from the Institute of Biosciences at the University of São Paulo. Has experience in science communication for digital media and in the development of digital science exhibitions. Research interests include science education, science communication, and the public understanding and popularization of science.

✉ mirellysoares@gmail.com

How to cite

Oliveira, B., Bizerra, A. and Soares, M. (2026). 'Transforming narratives: gender equity struggles in Latin American and Caribbean science museums'. *JCOM* 25(05), A01. <https://doi.org/10.22323/350220251031145242>.



© The Author(s).

This article is licensed under the terms of the Creative Commons [Attribution 4.0](https://creativecommons.org/licenses/by/4.0/) license. All rights for Text and Data Mining, AI training, and similar technologies for commercial purposes, are reserved.

ISSN 1824-2049. Published by SISSA Medialab. jcom.sissa.it