Article

LINHAS CRÍTICAS

Girl Science –Science Girl: Teaching Perspectives on Women in Science

Menina Ciência – Ciência Menina: Perspectivas docentes sobre mulheres na Ciência

Girl Science – Science Girl: Perspectivas docentes sobre las mujeres en la Ciencia

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Highlights

Actions focused on women in Science are essential for girls to aspire to scientific careers.

Training programs on women's participation in Science for primary school teachers can contribute to gender equity.

Including female scientists in teaching practices is necessary for girls to feel represented.

Abstract

This article addresses the underrepresentation of women in Science and the importance of teacher training for a reflective practice that supports equality in the scientific field. Its corpus consists of 24 reflective narratives written by Natural Sciences teachers working in the final years of Primary Education at public and private schools in Brazil. These participants took part online, in 2021, in the training course *Menina Ciência – Ciência Menina* [Girl Science – Science Girl], offered by the *Universidade Federal do ABC*, which focused on discussing female scientists in the school context. The aim of this study is to highlight the participants' perspectives regarding teaching practices and the inclusion of women in Science. With a qualitative approach, the 24 reflective narratives produced by the course participants were analyzed through the lens of Discursive Textual Analysis. The results underscore the importance of formative processes and reflection on teaching practices for the development of more gender-equal Science education.

Resumo | Resumen

Keywords

Women in Science. Teacher training. Teaching practice. Science education.

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Introduction

When studying the History of Science, it becomes evident that women “made important contributions in the natural sciences, physics, and mathematics—whether as enthusiasts, researchers, or supporters of family members—but were excluded and even prohibited from entering higher education for years” (Balbé et al., 2023, p. 14). This exclusion occurred because they faced disadvantages within the scientific context, as this field was perceived as an exclusively male domain, and “women were not—and could not be—treated socially as men, because, essentially, they were seen as having a reproductive nature” (Sedeño, 2001, p. 31). As a result, for a long time, women were confined to the domestic sphere, responsible for caring for the home and children (Tosi, 1998). Conversely, those who managed to participate —either directly or indirectly—in the world of science often did so from positions of privilege, typically due to family wealth or relationships to male scientists as wives, sisters, or daughters, occupying roles that supported them (Noordenbos, 2002).

From a contemporary perspective, there have been significant advances in the inclusion and participation of women in academic, scientific, and technological fields (Sígolo et al., 2021; Pena & Quadros, 2023). According to Tatagiba and Custódio (2022), this progress has been driven by the growing “activism of female researchers,” which has reignited discussions about the invisibility of women in science. It is well known that, in addition to historical, social, and cultural factors, women also face a lack of encouragement and an overwhelming burden, as they must balance academic responsibilities with family duties. “When the variable of parenthood is added to this equation, the scenario becomes even more challenging” (Tassini et al., 2023, p. 4), since women who are mothers must take on numerous caregiving responsibilities for their children. In response to this issue, the *Parent in Science* movement was created in 2016 by Brazilian scientists to raise awareness about motherhood within academic and scientific environments, advocating for more equitable conditions (Parent in Science, 2020). Thus, as positive outcomes, it is worth highlighting:

> [...] the change made by the National Council for Scientific and Technological Development (CNPq) to the Lattes Platform (https://lattes.cnpq.br/) in 2021, which allows graduate students and scientists to record their maternity leave periods, and *Law No. 13.536/2017*, which guarantees the right to maternity leave for research grant holders. (Tatagiba & Custódio, 2022, p. 2)

Another example that reflects the growing presence of women in science is that, in 2022, they represented 54.2% of students enrolled in master's and PhD programs in Brazil, and 58% of scholarship holders funded by the Coordination for the Improvement of Higher Education Personnel (CAPES) (Brazil, 2022). Although women are the majority in graduate studies in Brazil, when analyzing the profile of higher education faculty in the country, it becomes evident that this segment is still predominantly represented by men (Ferreira et al., 2022). And when we look specifically at the fields of Science, Technology, Engineering, and Mathematics

(STEM), the discrepancy is even greater, as these areas are still largely male-dominated (Tassini et al., 2023).

Even with the increasing presence of women in the scientific realm, gender inequality remains prevalent in many social spaces, including education and science teaching (Sígolo et al., 2021). Schools rooted in traditional education, for example, often impose distinctions between boys/girls, young men/young women, through their actions, activities, behavioral expectations, and “dictate rules based on standards established by the dominant order” (Lins et al., 2016, p. 97). In such environments, teachers often carry into their teaching practice ingrained conceptions of how students’ gender influences their learning process. This attitude toward the teaching and learning process shapes how students engage with scientific content (Sachs et al., 2021) and reinforces a culture that prioritizes the male gender over the female.

Thus, teaching practices shape students’ understanding of science and scientific work, their worldview, and their outlook on the future. Consequently, these practices can later influence students' career choices—whether they will pursue a scientific path or not—and contribute to their sense of agency in the classroom. According to Reeve (2009), it is important to foster students’ autonomy so that they may develop a sense of belonging, feel motivated and curious, remain engaged, and thus contribute to their own development as well as to the processing of information discussed in the classroom. This autonomy merges with student protagonism, defined as the student’s ability to take ownership of their educational journey.

Within this context, teacher education becomes an ally in the teaching and learning process, as it helps to outline pathways that must be followed in order to make gender equity an increasingly tangible reality in schools, in science, and in society as a whole. Moreover, it enables the discussion of challenges faced by girls in scientific practice (Leal et al., 2017). According to Pena and Quadros (2023, p. 325), teacher education “represents a locus where this debate can be broadened.” The authors further note that the absence of this debate within teacher training contributes to the “silencing” of gender issues in both the social and scientific domains. To address this, discussions that promote reflection on one’s own teaching practice are necessary. After such reflection, educators should seek new tools and strategies to facilitate lessons that promote equal participation of men and women, thereby contributing to equitable science education.

In light of this scenario, several projects are being developed by private companies and, especially, by Brazilian higher education institutions with the aim of highlighting the historical importance of women in science (Vaz et al., 2021). These initiatives primarily seek to “bring scientific knowledge to young girls and promote the role of women in science and technology” (Sígolo et al., 2021, p. 7). For this reason, most of these projects are aimed at girls in primary and secondary education, so that discussions may mature over time and empower them to help reverse the gender disparity that still exists within the scientific sphere.

To illustrate the importance of this topic, the World Economic Forum (WEF) publishes the annual Global Gender Gap Report (GGGR), which presents quantitative indicators from 153 participating countries—including Brazil—on gender equity across four sectors: Economic Participation and Opportunity; Educational Attainment; Health and Survival; and Political Empowerment. In addition to ranking countries (with Brazil placed 94th), the report warns that if effective measures are not implemented, gender equity in these four areas may take as long as 132 years to achieve (WEF, 2022). Moreover, one of the Sustainable Development Goals (SDGs) of the United Nations (UN) emphasizes gender equality, aiming to “achieve gender equality and empower all women and girls.”

From this perspective, in 2019, the Girl Science – Science Girl (MCCM) extension course was created by the Federal University of ABC (UFABC), located in the city of Santo André, São Paulo. The course targeted girls enrolled in the final years of Primary Education (*Ensino Fundamental*) in both public and private school systems. Its purpose was to highlight the major contributions of female scientists, the activities they developed (and continue to develop) in various fields of science, and to broaden the participants’ perspectives. The first edition of the course took place in person, held over four Saturdays on the UFABC campus in Santo André, São Paulo.

During this time, participants attended lectures by renowned female scientists and conducted experiments in the university’s laboratories—an exceptional opportunity, as for many students, this was their first contact with a university and its infrastructure (labs, auditoriums, classrooms, library, etc.).

In 2020, due to the COVID-19 pandemic, the course was fully adapted to an online format, which allowed for an increased number of participants and the inclusion of girls from all over Brazil. The lectures were then recorded and made available on the project’s website. To foster greater interaction between the speakers and the girls, conversation circles were scheduled, allowing students to participate synchronously, ask questions, and engage in dialogue with the scientists.

In 2021, the course was again held exclusively online, as in the previous year. However, considering the course’s main goal and the crucial role of teachers and their professional development in “maintaining, increasing, or reducing gender disparities in science education, as well as in investigating solutions to this problem” (Sachs et al., 2021, p. 3), the organizers also launched the Teacher Training Course *Girl Science – Science Girl* (MCCM), aimed at Natural Sciences teachers working in the final years of Primary Education in both public and private schools. Thus, the goal was to help incorporate discussions about women in Science into the participants' teaching practices in a reflective way. To enroll in the course, teachers were required to have 30 hours of availability, access to the internet and a Google email account, and to possess digital literacy skills, particularly with platforms such as Google Classroom and Google Meet. A total of 50 spots were offered to these professionals, distributed as follows:

Chart 1
Distribution of available spots for teachers working in public and private Basic Education systems

	Female Teachers	Male Teachers
Number of spots for public school teachers	30 spots	5 spots
Number of spots for private school teachers	12 spots	3 spots

Source: authorship.

Thus, in 2021, the MCCM program was implemented with two strands: One aimed at girls enrolled in the final years of Primary Education; and another directed at Science teachers. Both the course for girls and the one for teachers ran simultaneously. In addition to the specific content designed for educators, the teachers also had access to the materials (scripts and lectures) provided to the girls, and they participated in the live discussion circles alongside them. This shared experience was designed to help teachers better understand the girls' questions, how they could be inspired by female scientists, and why it is important for them to feel motivated and represented within the scientific context.

Given the above, this study stemmed from the issue of the limited—or complete lack of—discussion about women scientists in both initial and continuing Science teacher education programs, and the impact of this absence on teaching practices. This gap can contribute to gender inequality in science education by reinforcing stereotypes, as teachers without training in this area are often unprepared to address these topics in the classroom (Heerdt & Batista, 2016).

Therefore, the objective of this research is to understand the perspectives of the participants in the *Girl Science – Science Girl* (MCCM) Teacher Training Course, held in 2021, particularly regarding their teaching practices and efforts to encourage the inclusion of women in Science.

Methodology

This research is characterized as qualitative in nature (Moreira, 2002), aiming to understand the perspectives of the course participants after taking part in the *Girl Science – Science Girl* Teacher Training Course, organized by the Federal University of ABC (UFABC). Although the course offered 50 spots for teachers of Natural Sciences working in the final years of Primary Education, only 24 participants completed the course (that is, reached at least 70% of the required workload to obtain the certificate of participation, which included submitting a final assignment in the form of a reflective narrative). As for the participants' profiles, 23 identified as female and only 1 as male, with ages ranging from 23 to 45 years. To protect participants' privacy, they are identified in this study using the initial "P" (for professor—the Portuguese word for teacher), followed by the number corresponding to the order in which their narrative was received, along with their age and area of specialization (e.g., P01, age, area).

Regarding the resources provided by the training course, teachers had access to practical activity guides developed by the course's organizing committee, using easily accessible materials. In addition, they had weekly access to three or four lectures delivered by female scientists from a wide range of fields (Biology, Physics, Chemistry, Mathematics, Astronomy, Astrobiology, Computer Science, Speleology, Epidemiology, Oceanography, Paleontology, among others), working both in Brazil and abroad, including at the University of Iowa in the United States. Both the activity guides and the recorded lectures were made available on the MCCM project website.

As part of the course activities, the teachers participated in synchronous discussion circles held via Google Meet every Saturday, featuring the guest scientists of the week; a final experience-sharing session with all participating teachers to close the project; the preparation of a reflective report on their professional development and engagement throughout the initiative; and ongoing discussions on Google Classroom. Each week's activities were presented to the teachers with an emphasis on exploring the course materials (guides, lectures, discussions) critically and reflectively, so they could adapt them to their own school realities. Therefore, as the final assignment, participants were asked to write a reflective narrative in which they connected their course experiences to their teaching practices. This narrative served as the data source for the present study.

Data were collected through a Google Classroom group, in the “activities” section, where each participant submitted their reflective report in PDF format. The reflective narrative was structured as an essay. To guide the participants in writing this assignment, a structural outline was provided with four key axes, which were mandatory focal points to be addressed in the report:

Chart 2
Axes included in the structure of the reflective narrative:

Axis 1 – Lectures, discussion circles, and interactions	Participants highlighted which topics and approaches presented by the researchers they found most interesting and relevant for enriching their teaching practice, and how the formative moments – forums, discussion circles, Padlet – contributed to the exchange of knowledge among them.
Axis 2 – Intervention in the school context	In this axis, participants reported whether it was possible to implement any interventions in the schools where they work, or if they intended to develop something related to the theme "women in Science" in their classes.
Axis 3 – Reflection on teaching practice and self-assessment	A reflection on their own teaching practices concerning Science Education and the promotion of curiosity among their students, especially girls, along with a self-assessment regarding their participation in the course.
Axis 4 – Course evaluation	Where they were expected to include suggestions, criticisms, and comments.

Source: authorship.

Given the above and in accordance with the objectives guiding this research, only Axes 1, 2, and 3 from each of the 24 reflective narratives were analyzed.

Finally, for data analysis, the technique of Discursive Textual Analysis (DTA), as proposed by Moraes and Galiazzi (2011), was employed with the aim of attributing meaning to the narratives developed by the teachers. Once the data were collected, the process of dismantling or unitarizing the texts was carried out. After multiple readings, relationships among the texts were established, through which categories were defined. Lastly, the descriptions and interpretations were constructed.

Results and discussion

Following the data analysis, two categories emerged: 1) Continuing education and women in Science: contributions of the "*Girl Science – Science Girl*" teacher training course to teaching practice; 2) Implications of the "*Girl Science – Science Girl*" course for participating students, from the teachers' perspective.

The first category analyzed (continuing education and women in Science: contributions of the "*Girl Science – Science Girl*" teacher training course to teaching practice) highlights the participants' identification with the course and the contributions it offered to their continuing development. The course format, with discussions through forums and participation in conversation circles, expanded opportunities for listening to the experiences of these professionals, enriching their teaching practices and creating an environment of exchange and learning.

In this regard, the course sought to encourage reflection on the teaching practices of Science educators, aiming to bring girls closer to the scientific field and to motivate teachers to develop practices that enable and promote this connection both inside and outside school. In order to meet the demands of society, these spaces must contribute to the education of students who are conscious and critical of the roles they play within it. Such needs underscore the importance of continuing education for Science teachers, equipping them to help build a more equitable society.

The awareness of the need to deepen knowledge on more specific topics and content — often absent from undergraduate programs or other continuing education settings — was noted by participants, as expressed in the reflection by P03 (32 years old, Science and Biology teacher):

> I see that participating in the course provided a broader foundation for Science teaching. As a pedagogue, special education teacher, and researcher in the field of neuroeducation, my contact with different areas of Science during my undergraduate studies was shallow. It depends on seeking continued education, experience exchanges, and research.

This account highlights the existence of a gap regarding gender and education in Brazil: while there has been growth in investment in educational policies and research on the topic, it remains nearly absent from teacher education curricula and classroom practices (Sachs et al., 2021; Sígolo et al., 2021). Thus, as an alternative to mitigate this reality, the activities developed for the girls, as previously mentioned, could also be followed by the Teachers participating in the MCCM Training Course, including access to the practical activity guides. Additionally, it is important to note

that there were exclusive synchronous lectures and conversation circles for the participating teachers, in which they could actively engage.

Consequently, the expectation was that the teachers would be inspired by this material to develop lesson plans, adapting them to their teaching practices. In this sense, P02 (59 years old, Pedagogy and Biology teacher) states: “During the course, I tried to apply some of the ideas and content discussed in the classroom; these new approaches further increased students’ interest in the subject.” This excerpt shows that the discussions brought by P02 to her classroom contributed to drawing students’ attention. In line with this issue, P07 (30 years old, Biology teacher) emphasizes that, when discussing women in Science during her classes, she experienced “a sense of closeness to someone I ‘know,’ someone who did the work I am referring to. Some students get enthusiastic about this, which often leads to further discussion of the topic beyond the predetermined classroom content” (P07, 30 years old, Biology teacher).

Currently, many problems affect the quality of public education, with a constant need for changes in the education system to truly improve learning outcomes. Having qualified professionals is essential for this improvement. In this way, the more engaged, qualified, and willing teachers are to bring into the classroom issues that must be openly discussed among students—educating both boys and girls equally—the more capable they will be of promoting the necessary changes toward building a path to equity in Science.

The course provided an opportunity to exchange experiences between traditional practices and democratizing methods for Science. This is emphasized by P09 (29 years old, Science teacher): “The interactions among teachers were very important to understand the reality each one is subject to. The exchange of possibilities and methodologies is a challenge, since everyday routines end up suppressing discussions and interactions in the school context.” In a similar vein, P03 (32 years old, Science and Biology teacher) notes:

> The experience of participating in the *Girl Science – Science Girl* 2021 project brought many enrichments to teaching practice, both intracurricular — which we can address within curricular content — and extracurricular, which goes beyond the curriculum. Through the lectures, conversation circles, and interactions, I was able to perceive Science as closer to everyday life and more human.

It is essential that training offers opportunities for pedagogical practices focused on issues of gender relations and social inequality, establishing a transformative commitment to improving the conditions of women in scientific endeavors. Failing to consider “social discrimination in Science and Scientific Education leads teachers to overlook important elements present in students' individualities and experiences, which could inform their pedagogical actions, making them more effective and equitable” (Sachs et al., 2021, p. 18). Thus, as Dias (2014, p. 2) emphasizes, it is essential “to raise awareness among teachers, as opinion makers, so that their practices do not reproduce or reinforce sexist educational models.”

When analyzing continuous teacher training, Imbernón (2013) points out that new perspectives need to be developed regarding training — it should support, create, and enhance real reflection by individuals on their teaching practice within educational institutions and others. This should allow them to examine their implicit theories, operational frameworks, attitudes, etc., firmly establishing a constant process of self-assessment of what is done and why it is done.

This self-assessment process can be seen in the following statements:

> I believe it is necessary for teachers to constantly reflect on their educational practice, and the course brought me reflections on my practice and on my continuous process of development as a teacher and education professional. We are certainly not fully prepared after completing our degrees. It is true that our degree provides the theoretical foundation needed to deal with the content, but being a teacher goes far beyond that. Throughout life, we prepare and continue to grow. Whether in the classroom or in the everyday life of the school —in the everyday school environment—it is through training courses like this one that we are able to engage in extremely valuable reflections that enrich our professional development. (P04, 30 years old, Chemistry teacher)

> All knowledge acquired becomes relevant when applied in practice or when it leads us to reflect on our own teaching practice. Being a teacher is not an easy task. Every day brings a new situation to manage and mediate, without forgetting the principles of equity — to provide different mechanisms (if needed) so that everyone has equal opportunities for learning. (P13, 33 years old, Physics teacher)

This ongoing process of reflection and self-assessment of teaching practices, as shared during the MCCM Teacher Training Course (2021), led to the redefinition of some of the rigid and stagnant approaches that participants initially brought to the program—approaches characterized by monotonous, traditional, and decontextualized lessons that often relied on abstract language disconnected from students' everyday experiences. There is a pressing need to promote lessons that are contextualized and interdisciplinary—closer to students' lived realities (Fernandes & Prestes, 2021; Vizzoto & Mackedanz, 2020)—such as those presented during the MCCM course, where students can recognize the practical relevance of classroom content and apply it to their everyday lives. To make this possible, teachers must critically reassess their methodological approaches, possess a strong theoretical foundation in the subjects they teach, and commit to bridging the gap between scientific knowledge and real-world experiences.

In this regard, P10 (25 years old, Chemistry teacher) emphasizes:

> It is necessary to provide teachers with opportunities for continuous professional development, to foster their professional growth and also to address their actual working conditions, facilitating a transition from current practices to meeting the requirements set out in the *Lei de Diretrizes e Bases* [Law of Guidelines and Bases] (1996) regarding professional training.

In recent years, there has been growing interest in continuing education programs, which have brought to the forefront the need to incorporate gender equity studies into Science Education. However, many of these discussions remain largely theoretical and descriptive, merely highlighting the challenges inherent to promoting

gender equity in Science Education and the need to overcome them, without actually offering effective practices to address these issues (Fontana et al., 2021). In this teacher's words, one can perceive what Libâneo (2006) had already stated about teacher training — that it implies a continuous interweaving of theory and practice, with theory tied to the real problems of practical experience and practice being guided by theory.

The reality addressed by the MCCM Teacher Training Course (2021), which aimed to break stigmas surrounding the image of women scientists—beginning as early as in Primary Education classrooms—was clearly reflected in the participants' testimonies, such as those of P11 (52 years old, Biology teacher) and P09 (29 years old, Science teacher), respectively:

> Following this training, I will be more critical regarding the participation of girls, striving to humanize the image of the Woman Scientist. I will make the most of every moment experienced in this training, from the girls' 'good afternoon' greetings to the discussions, which were extremely valuable in every aspect. (P11, 52 years old, Biology teacher)

> It was possible to reflect on my teaching practice through lectures covering a variety of fields, such as Biology, Astronomy, Chemistry, Mathematics, Physics, Oceanography, Education, and the History and Philosophy of Science. However, beyond learning about these areas, I was also able to reflect on the importance of valuing women in Science. (P09, 29 years old, Science teacher)

These reflections underscore the need for teachers to critically examine their own practices and emphasize the importance of making women in Science more visible. As a result, participants were able to experience more engaging methods and lessons that were more closely aligned with students' realities, enabling both girls and boys to take on more active roles in the classroom while understanding the importance of female participation in the scientific field, as illustrated in the following testimony:

> Every word, every moment—from the introductions to the goodbyes—I absorbed and learned from the people who participated. I have noticed a change, albeit a small one, in my day-to-day teaching. Every time I meet with my students, the way I speak and especially the way I prepare a lesson to introduce content has changed. I think about what I could do differently, how I will capture my students' attention, how I can convey the same passion the researchers shared during their lectures. It was very important for my career to renew and find new meaning. (P14, 34 years old, Science teacher)

It is precisely this process of self-assessment and reflection on one's own teaching practice that constitutes meaningful continuing education for teachers. According to Nóvoa (2015), professional development is not built through the accumulation of courses, knowledge, or techniques, but through a process of critical reflection on practices that continuously (re)build a personal teaching identity.

The condition of teaching materials, especially textbooks, is another issue pointed out by the participating teachers regarding the challenges to achieving gender equity in the classroom. According to P10 (25 years old, Chemistry teacher):

> Breaking taboos, paradigms, and stereotypes about the personalities we encounter in films, cartoons, stories, and even in some didactic materials, which portray the scientist and this predominantly male universe in an unattainable role—white, heterosexual, 'crazy' men in lab coats, depicted as geniuses. (P10, 25 years old, Chemistry teacher)

According to Hendges and Santos (2022, p. 587), "when we examine textbooks (TBs), this hegemonic view of Science and Technology as masculine is also reinforced, as representations of scientists are frequently associated with men." In this sense, the patterns of active boys and passive girls are maintained, both in moments of leisure and study. Domestic activities—such as caring for the home and family—continue to be associated with women, while the father remains responsible for leisure and providing for the family. The textbooks analyzed by these authors perpetuate stereotypes of men and women.

It is essential for teachers to seek, through continuing education, engagement with themes that may not have been addressed during their initial training, or to deepen their understanding of such topics—refining practices that enable them to critically exercise their profession, especially when it comes to transforming the daily life of schools and challenging gender inequalities (Dias, 2014). With regard to the early stages of teacher education, future educators must be encouraged "so that they are capable of motivating their students to enjoy Science and helping them develop awareness around gender equality" (Pena & Quadros, 2023, p. 342).

In this sense, both MCCM courses—those directed at girls and those focused on teacher training—offer such discussions and reflective moments, allowing teachers to reassess their practices in order to contribute to a more equitable and motivating learning process for their students. P21 (30 years old, Biology teacher) emphasizes: "It was both inspiring and uplifting to see how far these women have come in their careers. This motivates me to increasingly seek proper training for my personal and professional development, which directly reflects in my performance in the classroom."

Regarding the second category that emerged from the data analysis (the implications of the *Girl Science – Science Girl* course for participating students from the perspective of the teachers), the narratives of the participating teachers revealed that courses such as MCCM enable students to develop conceptions and skills that empower them to take on leading roles in relevant discussions. In other words, they become confident and autonomous in the learning process. Within the school context, student protagonism becomes essential, as the student is no longer merely a listener but "contributes to the reconstruction of knowledge, seeks to innovate practice, and actively participates in everything" (Demo, 1998, p. 30).

One of the goals of the course is precisely to humanize the role played by women scientists, also serving as a tool for the popularization and democratization of Science and the representation of women in STEM fields, which are the most challenging for building their careers. This representation of women in the scientific context and the direct participation of the girls in carrying out the experiments enabled the perception of important situations for the teaching and learning

process, serving as practices for teachers to replicate. As reported by P02 (59 years old, Pedagogy and Biology teacher): “The discussions made me think about the importance of student protagonism in the construction of their own knowledge. In this way, investigative experiments are of utmost importance for the development of scientific thinking and the student’s own learning.” Therefore, one of the main roles of teachers is to enable this protagonism during the knowledge-building process, encouraging students to engage in class (Borges & Ustra, 2024).

Another aspect viewed positively from the teachers’ perspective was the way the MCCM (2021) course presented Science in a more accessible and relatable way for the girls. According to P17 (28 years old, Biology teacher): “All the subject-specific lectures were very enriching and brought many insights. They showed the application of Science in everyday life, how these studies work and why they are necessary.”

Thus, the narratives highlight that featuring women speakers who use age-appropriate approaches and practical activity plans—based on easily accessible materials that the girls could find in their own homes—helped the students perceive Science in a more practical way, embedded in their everyday lives. This process of understanding Science as something intrinsic to our everyday life facilitates the understanding of scientific content. To achieve this, it is the teacher’s role to seek out and propose methodologies that enable such understanding (Oliveira et al., 2023).

The course emphasizes that even in the face of difficulties, prejudice, and challenges encountered by women, they persist in doing Science, because “they were there—the scientists, the women, the mothers, and their realities—also showing their human and personal side. Therefore, even in the face of so many obstacles, especially when one is a woman, I will be able to encourage my students to be whoever they want to be” (P15, 31 years old, Physics teacher). For P22 (36 years old, Biology teacher), the MCCM (2021) course “humanized the scientists when they highlighted their realities beyond scientific research and the University, bringing their professional and personal journeys closer to a familiar and attainable reality for the students,” helping the girls develop a genuine interest in the fields presented by the speakers.

Educational practices play a constructive role in addressing gender differences, prejudice, and inequality within the school environment, which directly impact all spheres of society (Sachs et al., 2021). According to Dias (2014), by valuing these stereotypes and highlighting these differences in the classroom, the teacher contributes to building a space free of prejudice and supportive of diversity. Regarding social construction, the concept of gender has been shaped by the duality of masculine and feminine within the dichotomy of capable/incapable, which has been challenged by feminist critique in the struggle for its deconstruction. In the educational context, sex is taken as an element for understanding new frameworks aimed at symmetry, and in this regard, the role of the teacher becomes essential.

According to the teachers' perceptions, the implications of the course for the students are far-reaching, enabling the opening of timely discussions essential to the construction of educational models capable of addressing the needs of society. These discussions challenge stigmas that limit development—whether in Science or in gender issues—through the representation of women scientists, as exemplified by the MCCM 2021 course, which was designed for girls enrolled in the final years of Primary Education.

Final considerations

The findings highlight the reflections of teachers on their pedagogical practices and professional development in relation to contemporary issues such as the underrepresentation of women in Science and their approach to teaching. These reflections were shaped by their experiences in the *Girl Science – Science Girl* (MCCM) Teacher Training Course (2021). For the participants, the MCCM course not only fosters familiarity with Science among school-aged girls but also empowers them to act as multipliers of the ideas and discussions explored during the course—contributing to the construction of a less sexist educational environment regarding the presence of women in Science.

The educators who took part in this research emphasized the importance of teacher education in preparing them to address emerging issues, such as gender equality and the dismantling of stereotypes related to scientific practice. Fortunately, initiatives such as the MCCM Teacher Training Course help to bridge the existing gaps in initial teacher education.

The MCCM Teacher Training Course made it possible to expand discussions about women in Science through reflections on teaching practice, contributing to the sharing of successful experiences, the teaching and learning process, and to the democratization and popularization of Science still at the Primary Education level. Thus, it is important to highlight the need for training processes that promote a careful and critical view of gender inequality in the scientific field and encourage the development of knowledge involving female representation in Science.

Therefore, the readings and data presented in this research corroborate the importance of reflective teacher education and the need to increase the visibility of women in Science, so that they can serve as references in the practice of Basic Education teachers, thereby contributing to representation in Science and the promotion of gender equality in Science education. It is known, however, that public educational policies are needed not only to ensure women's entry but also, and most importantly, their permanence in Science (Tassini et al., 2023).

Finally, we reaffirm that there is still a vast field of research to be explored and developed in order to contribute to the dissemination of women in Science, the breaking of paradigms in academia and pedagogical practice. And that despite the progress made, unfortunately, there is still a long way to go toward gender equality.

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Resumo

O presente artigo aborda a sub-representação de mulheres na Ciência e a importância da formação docente para uma prática reflexiva que contribua com a igualdade no âmbito científico. Tem como *corpus* 24 relatos reflexivos de professores de Ciências Naturais atuantes nos Anos Finais do Ensino Fundamental em escolas das redes pública e privada de Educação Básica no Brasil. Esses sujeitos participaram on-line, em 2021, do Curso de Formação para professores Menina Ciência – Ciência Menina, realizado pela Universidade Federal do ABC, que versava discussões sobre mulheres cientistas no contexto escolar. O objetivo desta pesquisa é destacar as perspectivas desses sujeitos relacionadas à prática docente e à inserção de mulheres na Ciência. De caráter qualitativo, foram analisados, sob a ótica da Análise Textual Discursiva, 24 relatos reflexivos elaborados pelos cursistas. Os resultados apontam a importância dos processos formativos e da reflexão sobre a prática docente para o desenvolvimento do ensino de Ciências mais igualitário.

Palavras-chave: Mulheres na Ciência. Formação de professores. Prática docente. Ensino de Ciências.

Resumen

Este artículo aborda la infrarrepresentación de las mujeres en la ciencia y la importancia de la formación del profesorado para una práctica reflexiva que contribuya a la igualdad en el ámbito científico. Su *corpus* son 24 informes reflexivos de profesores de Ciencias Naturales que trabajan en los últimos años de la enseñanza primaria en escuelas públicas y privadas de Brasil. En 2021, estos sujetos participaron en línea en el curso de formación de profesores Menina Ciência – Ciência Menina, organizado por la Universidad Federal del ABC, que abordó el tema de las mujeres científicas en el contexto escolar. El objetivo de esta investigación es destacar sus perspectivas sobre la práctica docente y la inclusión de las mujeres en la ciencia. Este estudio cualitativo analizó, desde la perspectiva del Análisis Textual del Discurso, 24 informes reflexivos producidos por las participantes del curso. Los resultados señalan la importancia de los procesos de formación y reflexión sobre la práctica docente para el desarrollo de una enseñanza de las ciencias más igualitaria.

Palabras clave: Mujeres en la ciencia. Formación del profesorado. Práctica docente. Enseñanza de las ciencias.

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