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"Gurias, partiu UFRGS!": Encouraging girls to shape their future in the fields of STEM

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Abstract. The pursuit of gender equality in education continues to face challenges, particularly in the fields of science and technology, where the disparity between men and women remains significant. In response to this issue, the Meninas na Ciência extension program of the UFRGS Institute of Physics was established ten years ago with the mission of encouraging girls and young women to pursue and persist in STEM careers, breaking down gender stereotypes and prejudices. One of the program's key initiatives is Gurias, Partiu UFRGS!, an action designed to increase female participation at the university through immersive experiences in teaching, research, and extension activities at UFRGS. These inclusive activities are led by female researchers and undergraduate students, fostering an environment of empowerment and engagement.

Resumo. A busca pela igualdade de gênero na educação ainda enfrenta desafios, especialmente nas áreas de ciências e tecnologia, onde a disparidade entre homens e mulheres permanece significativa. Para enfrentar essa questão, há dez anos foi criado o programa de extensão Meninas na Ciência, do Instituto de Física da UFRGS, com a missão de incentivar meninas e jovens mulheres a ingressarem e permanecerem em carreiras STEM, superando estereótipos e preconceitos de gênero. Uma das iniciativas centrais do programa é a ação Gurias, Partiu UFRGS!, que busca ampliar a participação feminina na universidade por meio de vivências em espaços de ensino, pesquisa e extensão da UFRGS. Essas atividades inclusivas são conduzidas por pesquisadoras e graduandas, promovendo um ambiente de empoderamento e engajamento.

Keywords. Gender and Science; Educational Astronomy.

1. Introduction

This article aims to present the history of Meninas na Ciência,[1] an extension program of the Institute of Physics at the Federal University of Rio Grande do Sul (IF-UFRGS), and to share the experience of Gurias, Partiu UFRGS! in 2023, an initiative within the program. In 2024, this action gained prominence and evolved into an independent extension project, resulting from a collaboration between the Institutes of Physics and Mathematics & Statistics at UFRGS (IF and IME−UFRGS).

The project's activities include visits to various university institutes and departments, as well as hands-on experiments and lectures, providing participants with immersive and engaging learning experiences. Since its foundation, Meninas na Ciência has aimed to develop an action plan capable of impacting the engagement of young women in choosing and remaining in Science, Technology, Engineering, and Mathematics (STEM) careers. Promoting the interaction of these girls with the academic environment of these fields, having female professors and researchers as ambassadors, has proven to be effective—not only in encouraging them to pursue STEM careers but also in helping them envision higher education as a place they belong.

2. Project History and Structuring

The underrepresentation of women in STEM careers is a global challenge, also evident in the Brazilian context. To combat gender stereotypes and encourage female participation, the Institute of Physics at UFRGS launched the Meninas na Ciência program in 2013. Through workshops, lectures, and training sessions in schools, the initiative seeks to dismantle sociocultural barriers and inspire young women to pursue science careers.

Figure 1. Photo of the action's first edition, in 2016.

Increasing engagement in STEM requires a multifaceted approach centered on education, inclusion, and visibility. By promoting diversity and accessibility, more young people can feel encouraged and empowered to follow these critical career paths. Tackling the gender gap in STEM also demands a broader understanding of systemic inequalities shaping women's roles in the workforce.

In 2016, within this framework, Gurias, Partiu UFRGS! emerged as an initial one-time initiative. Its goal was to bring girls closer to the university environment, particularly in STEM fields, by providing hands-on experiences at UFRGS (Fig.1).

[1] https://www.ufrgs.br/meninasnaciencia/gurias-partiu-ufrgs

Figure 2. Photo from the first meeting of the 2023's Edition.

Figure 3. Photo of the astronomical observation - 2023's Edition.

After a pause during the pandemic, the project resumed its in-person activities in 2023 with its seventh edition (Fig.2). In 2024, it was officially recognized as an extension project under the Institute of Mathematics and Statistics, in collaboration with the Institute of Physics at UFRGS.

3. Methodology and Impact

The Gurias, Partiu UFRGS! project follows an annual cycle, featuring four to five in-person meetings designed for girls from the final year of elementary school onwards. Activities take place in various spaces across the Federal University of Rio Grande do Sul (UFRGS), including institutes such as Physics, Mathematics and Statistics, Chemistry (Fig.3), Biosciences, and the Department of Astronomy. The program is designed to integrate hands-on experiences with critical reflection, beginning with technical visits to laboratories and museums, such as the Museum of Paleontology, where participants engage with scientific methodologies and educational collections. One of the project's highlights is the night of astronomical observation at the Campus do Vale Observatory (OCV), offering participants an immersive experience in astronomy.

To assess the impact of the project, post-edition questionnaires are administered, focusing on how the activities influence academic choices and perceptions of careers in STEM (Science, Technology, Engineering, and Mathematics). In the 2023-2024 edition, among the 42 participants with at least 75% attendance, half responded to the survey. The data revealed that 90% of them credited the project with directly influencing their decisions regarding higher education courses, with 70% of the graduates enrolling in public institutions. Additionally, all participants described the astronomical observations as "unique" and "unforgettable" experiences, emphasizing that their time at the Campus do Vale Observatory (OCV) expanded their interest in scientific fields, particularly in the exact sciences

These results highlight the effectiveness of strategies that integrate university immersion with hands-on experimentation. Astronomy, in particular, has proven to be a powerful pedagogical tool, capable of sparking fascination and scientific curiosity. At the same time, discussions on gender and racial equity have helped young women develop greater confidence in challenging stereotypes in academically hostile environments. Thus, the project not only facilitates access to higher education but also fosters diversity in science, making it more representative and inclusive.

4. Conclusion

The Gurias, Partiu UFRGS! initiative has established itself as a transformative model in addressing female underrepresentation in STEM. By combining hands-on experiences in university settings with critical reflections on gender and racial equity, the project demonstrates that academic immersion is an effective strategy for fostering interest and confidence in young women. Astronomy has emerged as a central pillar of this transformation. Observations at the Campus do Vale Observatory (OCV), described as "unique" and "unforgettable" by 100% of the participants, illustrate how playful-scientific activities can dismantle perceptual barriers and inspire careers in traditionally male-dominated fields. In this way, the project continues to pave the way for a more equitable and diverse scientific community.

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