Assessing and Improving Girls' and Women's Math and STEM Identity

Lily Bucchi, Charvi Kavadekar, Valery Rivera
Dr. Victoria Akin[1], Dr. Sophia Santillan[2], Dr. Lauren Valentino[3]
Undergraduate Students: Chloe Broser, Cate Gerson, Michelle Giffoni-Albor, Nazdua Karisa, Leah Lam

Bass Connections Open

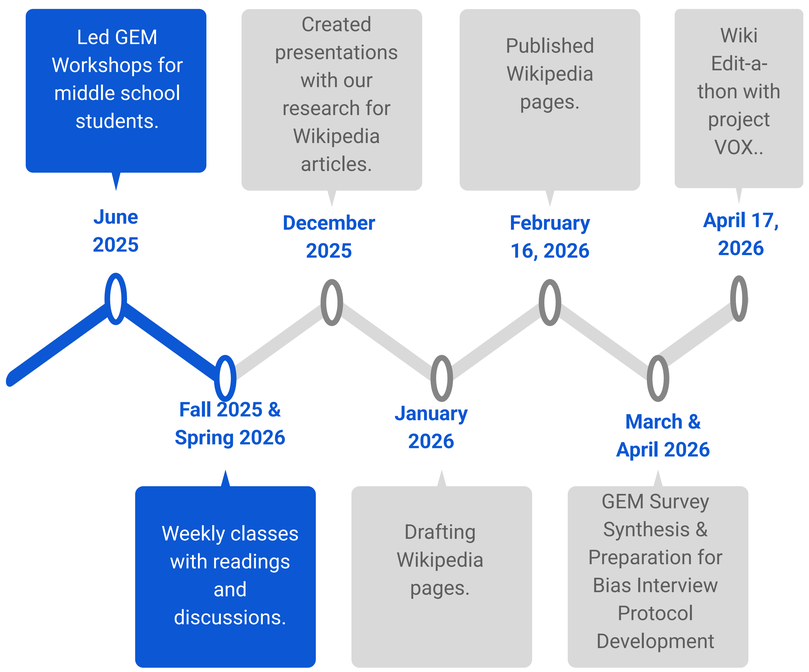
Background

Despite the increase of women in STEM, women are still underrepresented in STEM. The underrepresentation persists not because women women lack STEM abilities or are less interested in STEM, but because bias, hostile environments, and a lack of female role models.

On Wikipedia, less than 20% of Wikipedia biographies are about women, and 80% of Wikipedia editors are men. The efforts this Bass Connections program has made to bridge the gap, is to be part of the WikiProject Women in Red, a group of volunteer editors who aim to "move the needle" in terms of statistical representation of women on Wikipedia.

This project also addresses skills development, connections to female STEM mentors, and preparation for gender bias.

Timeline



Methods

The team used a multi-angled approach to address systemic biases and encourage young girls and women to develop their STEM identities.

1. Participating in GEM summer workshops to help promote girls' confidence in STEM.
2. Created Wikipedia biographies about "hidden women" in STEM, inspired by the Women in Red Project.
3. Interviewing and revising a protocol to gain insight on how women have been prepared for gender bias, and how these experiences have impacted their career journeys.
4. Analyzing qualitative data from previous gender bias surveys to investigate questions regarding themes and demographics of responses.

Results

This Bass Connections group have published or edited eight Wikipedia articles featuring a diverse array of women in STEM ranging from statisticians to doctors.

María Cristina García-Sancho

1 language

Article Talk | Read Edit View history Tools

From Wikipedia, the free encyclopedia

María Cristina García-Sancho y Álvarez-Tostado de Penichet (née **María Cristina García-Sancho y Álvarez-Tostado**; May 22, 1919 – February 21, 2013) was the first Latin American and Mexican female neurosurgeon. She is best known for the García-Sancho One-step Bilateral Cordotomy, which she used in more than 1,600 cases at Mexico's National Institute of Oncology and the Women's Hospital for cancer patients.[1]

Early Life [edit]

On May 22, 1919, María Cristina García-Sancho y Álvarez-Tostado was born in Guadalajara, Jalisco, Mexico, to parents Luis García-Sancho and Ana Álvarez-Tostado Robledo. She had two brothers and one sister. Her family, composed of white-collar professionals, emigrated to Mexico City due to the economic conditions in Guadalajara following the Mexican Revolution. After selling their property, García-Sancho's parents traveled and settled in Mexico City when she was one-and-a-half years old.[2]

Education and career [edit]

García-Sancho completed her secondary education at the Motolinía School (now Motolinía International Institute) and later enrolled in the School of Medicine at the National Autonomous University of Mexico (UNAM) in 1941. She earned her neurosurgical degree with honors in 1947. Her interest in neurology developed during medical school, and upon graduation in 1947, she wrote a clerkship thesis titled *The*

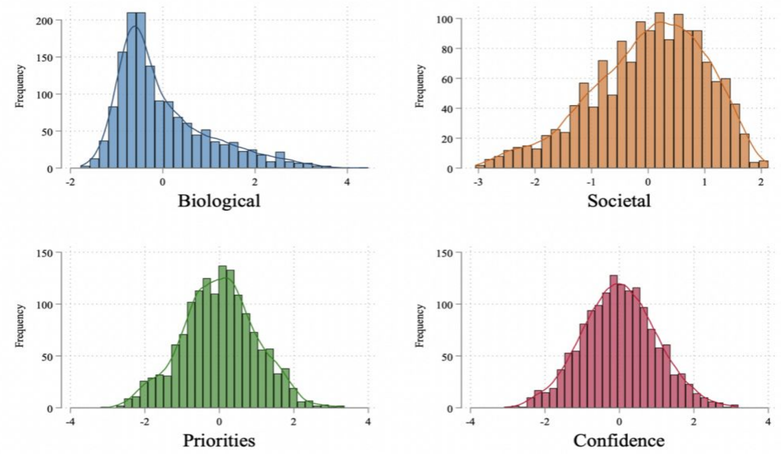
María Cristina García-Sancho

GEM Summer

In GEM (Girls Exploring Math) workshops, middle school students participate in a summer program engaging in collaborative math activities and visits to Duke research labs, designed to build confidence in their math abilities. Research is ongoing to assess the program's impact on participants' STEM identity and long-term engagement.

Current & Future Research

Causal attributions for Gender Gap in STEM: Analyzing open-ended survey responses from a representative sample of 1,500 U.S. adults to identify themes in perceived causes of the STEM gender gap, examining how these relate to political beliefs, policy preferences, and demographics.



Distribution of causal attributions in sample

Preparation for Bias Interview Study: Refining and conducting a qualitative interview protocol to explore how women in STEM have been prepared for bias. Goal is to develop validated survey measures to understand the impact of bias preparation on career trajectories.

Future research: Continuing to conduct more interviews with refined protocol. Findings from survey responses will inform the development of more comprehensive surveys measuring causal attributions of the gender gap in STEM.

Acknowledgements: Ingrid Daubechies, Duke Mathematics Department, Carolina Women's Center, restor3d, Duke Mechanical Engineering and Materials Science