

Seeds of Success: IF/THEN edition

Final Report



IF/THEN
AN INITIATIVE OF LYDIA HILL PHILANTHROPIES

**SHE CAN
CHANGE
THE WORLD**
Project

AAAS



**Ciencia
Puerto Rico**
cienciapr.org

Summary

Seeds of Success is a Program that mitigates underrepresentation of Latinas in STEM by empowering 7th-9th grade girls in Puerto Rico through: connections with Latina STEM role models, exposure to STEM careers and activities; and guidance to develop leadership skills and become STEM Ambassadors. The IF/THEN edition impacted 121 girls, 121 women mentors and reached almost 19,000 people via webinar series that hosted renowned female STEM professionals, and completion of more than 80 STEM outreach projects. Girls exit the program with more positive attitudes towards science, increased interest and motivation to pursue STEM degrees, and higher self-regard as leaders.



**LATINA ROLE
MODELS**



**OPPORTUNITIES
IN STEM**



**LEADERSHIP
DEVELOPMENT**

Participant IF/THEN Ambassadors

1. Minerva Cordero
2. Roselin Rosario-Meléndez
3. Beatris Mendez
4. Greetchen Díaz
5. Deborah Berebichez
6. Davina Durgana
7. Ana M. Porras
8. Elizabeth Engler-Chiurazzi



Since 2015, Seeds of Success, a Program of the nonprofit organization Ciencia Puerto Rico has connected girls with Latina STEM role models and inspired them to complete STEM outreach projects, leading to increased interest and motivation to pursue STEM degrees, higher self-regard as leaders, and to thousands more students being exposed to Latina STEM role models. In 2020, the Program started a collaboration with the AAAS IF/THEN initiative and its Ambassadors Greetchen Díaz, Roselin Rosario-Meléndez, Minerva Cordero and Beatris Mendez, supported by Lyda Hill Philanthropies to launch **Seeds of Success: IF/THEN edition**. The goals of the Program were to: (1) connect participant girls to women STEM role models and mentors; (2) incorporate topic-specific STEM workshops and activities, such as coding, chemistry, microbiology and math; (3) guide participants to develop leadership skills and give their outreach projects higher media visibility so they can also inspire others.

To achieve the Program goals, a curriculum was developed and implemented through the 2020-2021 school year. Before the Program started, each girl received a Seeds of Success Welcome Kit that included guides, educational material and hands-on activities (including materials for a neurobiology hands-on activity donated by IF/THEN Ambassador Liz Engler-Chiurazzi). Through the online webinars, the girls were coached to complete and report the outcomes of their activities. To connect girls to women in STEM, they were assigned to a Latina in STEM mentor to receive 1:1 online mentoring at least twice. Girls had access to additional role models through the Women in STEM Digital Collection and interacted online with additional women STEM leaders and IF/THEN Ambassadors (Davina Durgana, Deborah, Berebichez, and Ana M. Porras) through the “Juntas Podemos” (Together We Can) webinar series. The Program incorporated STEM workshops and activities on the topics of coding, chemistry, space science, climate change, etc., and included a hands-on activity to do at home. In order to guide participant girls to develop leadership skills and practice community engagement, they participated in a leadership workshop and had to complete an outreach project in their schools or communities to become STEM Ambassadors.

Seeds of Success: IF/THEN edition had three main audiences: (1) participating 7th to 9th grade girls, (2) Latina women in STEM mentors and (3) the general public. The program recruited 121 girls across Puerto Rico to participate. Also, through a newly established mentoring program, we provided a professional development experience to the 121 Latina STEM role models who were recruited. Finally, the reach of the Program was extended to additional students and the general public through the “Juntas Podemos” webinar series and the STEM Ambassador outreach projects of the participating girls. These outreach projects reached 18,127 additional people.

Due to the COVID-19 pandemic, the proposed timeline and activities for Seeds of Success: IF/THEN edition, had to be modified from the original plan. Specifically, all interactions were converted to an online format, we sent Kits with all the needed materials, increased the number of STEM activities and workshops throughout the Program year, and introduced a formal 1:1 online mentoring program. We also changed our recruitment strategy significantly and added elements to improve the completion rate of STEM Ambassadors projects.

The Program monitored different metrics (see below) to evaluate success and to ensure it met the Program outcomes. The assessment strategy included: (1) a parent survey, to understand the girls’ household context and previous exposure to STEM; (2) workshop evaluation questionnaires, to examine the opinion and satisfaction of the girls and participating mentors with different aspects of the workshops; (3) and a summative assessment, comprised of a survey before the first workshop and one before the closing ceremony, to assess any changes in participants’

perceptions of scientists and engineers, outcome expectations regarding STEM careers, self-efficacy in STEM, and interest in STEM fields. The program received IRB approval to implement these surveys.

Seeds of Success will continue its impact in Puerto Rico. We are currently running a new cycle of 120 girls for the 2021-2022 school year. The Program aims to do a hybrid schedule with online activities during the 1st semester and in-person and online activities during the 2nd semester. This year, the Program will also include the participation of 10 Program alumni (past participants) who will serve as peer-mentors to the recruited girls. Finally, the Program will implement a long-term evaluation strategy to track outcomes such as high school graduation, college enrollment, choice of major, and future career choices. In the future, Seeds of Success has specific plans for expansion beyond Puerto Rico including establishing sites in Latinx communities across the US in which our unique role-models and programmed activities are expected to have similar positive effects. To promote sustainability and improvement of the Program, we plan to continue our partnerships, including our collaboration with Johnson & Johnson and wiSTEM2D.

Seeds of Success IF/THEN edition was a very successful Program that was able to recruit, retain, and engage girls, despite a global pandemic. A record number of applicants was received and the 121 participant girls represented 52 municipalities of Puerto Rico and 91 schools (69% from public schools). The Program was also able to recruit a record number of Latina STEM mentors and role models to support the girls. A total of 82 girls who completed their STEM Ambassadors projects were able to reach a record number of students and the general public. In addition, for the IF/THEN edition, new features were added, including a formal online mentoring program, a Women in STEM Digital Collection, and the "Juntas Podemos" webinar series. We had a learning process that allowed us to validate our model and demonstrate that it is flexible and resilient, as it can be implemented both in person and online. Finally, the best definition of success comes from the many testimonies that participating girls give us upon completing the Program and becoming STEM ambassadors:

"After participating in this program, I confirmed my interest in science. This great initiative assured me that I could do whatever I want. I learned a lot from my peers and from all the Role Models who guided us throughout this journey. I am very grateful for the opportunity."- Seeds of Success participant girl

Evaluation metrics

- **Number of applicants:** 480 7th to 9th grade girls from Puerto Rico
- **Girls' recruitment:** 121 recruited to participate in the program and who participated in the orientation & leadership webinar
- **Girls' retention:** 88 girls who completed the program activities
- **Number of STEM Ambassadors:** 82 girls who completed their STEM outreach projects (submitted evidence)
- **Additional people reached through the girls' STEM outreach projects:** 18,127
- **Women mentor's recruitment:** 121 Latinas in STEM and role models for 1:1 online mentorship program
- **Additional recruitment of Latina Role models:** 70 Latina women in STEM who participated online as speakers at "Juntas Podemos", workshops' facilitators, and were included in the digital collection
- **Surveys:**
 - Participant girls: 97% overall program satisfaction
 - Participant girls: All survey items about program activities satisfaction received a median value of 4 or higher in a scale of 1-5, with 5 being the most positive score.
 - Participant girls: 93% of the survey participants showed interest in participating in one or more STEM activities (ex. STEM advanced classes, STEM camps, science fairs, or continue STEM studies) after completion of the Seed of Success Program.
 - Participant girls: 60% of survey participants showed an increase in self-efficacy as shown by pre/post surveys. A comparison between self-efficacy item scores in pre and post survey was not statistically significant (p-value .2298)
 - Participant girls: Results have shown significant improvements on girls' attitudes towards scientists and engineering (perceptions of scientists) with p-values: <0.00001 and <0.00001, respectively.
 - Participant role models (mentors): According to the mentors' experience and satisfaction survey, (n=82) 82% mentors agreed that the mentoring experience allowed them to contribute to the development of girls in STEM disciplines and 52% develop their skills to interact with young audiences.
- **Attendance to "Juntas Podemos":** 804 attendants to 10 webinars
- **Number of collaborators in the Seeds of Success Coalition:** 51
- **Visits to Seeds of Success Women in STEM Digital Collection:** 10,575
- **Media tour impact:** The Celebration media tour and press campaign highlighting girls' projects and program achievements, resulted in the equivalent of \$38,450 in digital, radio and TV time (13 print, radio and TV spots). See attached impact report.



Outputs

- **Website (s)**
 - **Seeds of Success new website-** A new website for the Program was created which includes information for interested girls, participants, mentors and collaborators. It also includes the Digital Women in STEM Collection, videos for “Juntas Podemos” and additional resources for girls.
- **Events (s)-** See attached pictures and promotional materials for selected events
 - **Knowing the Program-** Program launch and orientation for potential participants with IF/THEN Ambassadors (Facebook Live)
 - Program orientation & Leadership webinar- Participant girls received an online program orientation along with their parents and also participated in a leadership exercise.
 - **Juntas Podemos webinars-** The “Juntas Podemos” webinar series was celebrated in collaboration with the Ecoexploratorio, Puerto Rico science museum who hosted 10 webinars through their Zoom platform. The videos are maintained on the museum’s YouTube and the Seeds of Success website, so that many more can watch them:
 - Nanette Cocero- Nanette’s Facebook Live was not maintained because it was not allowed by her job company.
 - Monica Feliú-Mójer
 - Davina Durgana (IF/THEN Ambassador)
 - Wanda Díaz-Merced
 - Clara Mosquera
 - Alba Colón
 - Ana M. Porras (IF/THEN Ambassador)
 - Deborah Berebichez (IF/THEN Ambassador)
 - Karen Moreno
 - Marissa Morales
 - **Coding workshop-** IF/THEN Ambassador, Dr. Beatris Méndez-Gandica and her team from Nuevo Foundation offered an online workshop focused on giving girls introductory knowledge about programming/coding concepts and tools, including many languages such as Scratch, Python, JavaScript, HTML/CSS, and C# and that engages both the analytical and creative sides of a student.
 - **Final ceremony + lab tours-** During the online closing ceremony the program (1) presented the outcomes of the Seeds of Success program and girls’ achievements, (2) gave out special awards to the best STEM Ambassadors’ projects (selected by an external committee) and (3) showed three virtual visits to academic labs at host universities in Puerto Rico.
 - **Online panel: A conversation with Amgen women in STEM-** A panel of women in STEM discussing their experiences and trajectories in the pharmaceutical industry.
 - **Workshop: Space Transportation-** An 1 hour online workshop offered by the Ecoexploratorio museum
 - **Workshop: Meteorology and Climate Change-** An 1 hour online workshop offered by the Ecoexploratorio museum
 - **Chemistry workshop-** The American Chemical Society student chapter (University of Puerto Rico-Río Piedras) offered a 2-hour online workshop with chemical experiments and demonstrations. Girls received all the materials needed to participate.

- **Videos**

- **Promotional videos-** We developed promotional videos for our call for applications and have Ambassadors, role models and past participants motivating girls to apply.
 - [Example promotional video 1](#)
 - [Example promotional video 2](#)
- **Guide videos-** We produced a set of informational videos to guide girls through the program goals and activities. These videos are not public and were shared only with participant girls.
 - [Example video: STEM outreach project](#)
- **Program videos-** We produced videos in Spanish highlighting girls and program achievements that are maintained in CienciaPR's YouTube channel.
 - [Video 1- Launch "Juntas Podemos"](#)
 - [Video 2- Program achievements and testimonies](#)
 - [Video 3- Program achievements](#)
 - [Video 4- Winners: STEM outreach project](#)
 - [Video 5- Holidays celebration](#)

- **Curricula/classroom materials**

- **[Latina Women in STEM Digital Collection](#)** (Spanish)- The Seeds of Success Latina Women in STEM Collection includes 160+ Latina role model's profiles in Spanish that includes an introduction video, a short bio and a poster. The Collection includes a user's guide video and posters can be downloaded for free.

- **Other**

- **Seeds of Success Welcome Kit-** Participant girls received a welcome Kit with program guides, educational materials and hands-on STEM activities.
- **Program guides-** We developed guides for (1) participant girls (2) mentors and (3) project's host organizations. See attached guides in pdf.
- **1: 1 online Mentoring program-** A new online 1:1 mentoring program was established to support girls and to provide an experience for Latina women in STEM to serve as mentors and advisors to 7th to 9th grade Latina girls. Mentors received a digital guide, an orientation and staff support. Mentoring sessions were coordinated between girls and mentors according to their availability during the period from September 2020 and February 2021.
- **[STEM Ambassador's Projects-](#)** As part of the program, participating Seeds of Success girls designed and completed online & in-person activities/events as their STEM Ambassador outreach activity. These activities have three goals: (1) help girls learn and see first-hand how science can be an empowering tool for their communities; (2) help girls develop communication, teamwork, and time management skills, as well as their self-confidence as leaders and innovators; and (3) extend the impact of the program to more young people. Girls reported their projects and project summaries are included in the website.
- **[Seeds of Success Coalition-](#)** A Coalition of 40+ collaborators that includes industry, non-profits, academia and other organizations that support the program and the girls. Two museum were part of the Coalition: "Ecoexploratorio Museo de Ciencias de Puerto Rico" and "Centro Criollo de Ciencias y Tecnología del Caribe".

Seeds of Success Coalition



*Si apoyamos una chica en STEM,
ENTONCES ella puede cambiar
el mundo*

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