



Codepillars Club CAGUAS

**A SPACE TO ENCOURAGE GIRLS
TO STUDY SCIENCE AND TECHNOLOGY**

Summary

According to UNESCO statistics, women account for less than 30% of researchers worldwide and have a minority presence in science, technology, engineering and mathematics studies. Consistent with this data, a report published by the National Institute of Science of Puerto Rico indicated that in 2012 only 3.1% and 4.8% of girls graduated in engineering and computer science, respectively.

Faced with this reality, the city of Caguas is promoting the Codepillars Club project with the aim of encouraging girls to take an interest in professions

related to science, technology, engineering and design. To do so, it proposes a weekly educational space with workshops led by professional women from different specific areas. Activities aimed at boosting their self-esteem, creativity and their cooperation and leadership skills are also conducted so that they can imagine themselves as future entrepreneurs and leaders.

The project began in 2017 under the initiative of the local government of Caguas and is coordinated by the Caribbean Creole Science and Technology Center (*Centro Criollo de Ciencia*

y Tecnología, C3TEC), a non-profit organisation with municipal participation that provides an interactive space for learning and experimentation in the field of science and technology.

City: Caguas
Country: Puerto Rico
Inhabitants: 128.937

Topics: Gender equality, Science

Goals

- ▶ To promote the inclusion of girls in the field of science, technology and research as a viable alternative in their future professional development.
- ▶ To empower girls so they can see themselves as future entrepreneurs, innovators and leaders in the field of science and technology.



Context

Caguas is an autonomous municipality in the eastern-central region of Puerto Rico, just minutes away from the metropolitan area and the capital city of San Juan. Divided into eleven neighbourhoods, the city is located in a valley that covers an area of 152 km² and has a population of 128,937 inhabitants, 46% of whom are women and 54% are men.

Services are among the city's main economic sectors. Recently, the council's

commitment to innovation, technology and science resulted in the creation of a technological entrepreneurship ecosystem, thanks to the work carried out by the Centro Criollo de Ciencia y Tecnología del Caribe (C3TEC), the specialised secondary school in science, mathematics and technology CIMATEC, and the INOVA Emerging Business Centre (a municipal incubator to support entrepreneurship).

Methodology

The project is delivered free of charge in the format of a weekly workshop for six months and is designed for girls between nine and sixteen years old who are selected via an application form and a motivation letter.

The initiative is based on an educational model that actively and excitingly integrates the areas of science, technology, engineering, arts and mathematics (STEAM), with

a view that the girls involved devise, develop and complete a project based on a need detected in their environment.

The sessions are led by professional women in each of the subjects and include complementary content related to skills such as cooperation, communication, leadership, self-esteem and creativity.

Participants from previous editions are also encouraged to act as mentors for new groups.

At the end of each edition, a public event is held at which the girls present their projects and/or prototypes of developed products.



★ Evaluation

Since its launch, 120 girls have taken part in the project, making it one of the city's most stable initiatives. What's more, a progressive increase in applications is being observed, which is attributed to an ever-growing interest among girls in these subjects, public knowledge of the initiative, and its excellent reviews from previous participants. On top of that, some project participants have ended up enrolling for university studies in technologies, agricultural sciences and/or biology.

The scientific method used in all the projects is geared towards innovation through engineering, robotics and programming. The prototypes made by the young women provide solutions to improve the quality of life in terms of safety, health, well-being, prevention and education. As an example, some participants designed a prototype that uses tidal energy

to ensure the supply of electricity to their communities, which had been hit by the damage caused by Hurricane Maria to the traditional electricity grid. Another participant devised a mobile app that sends notifications to elderly people with memory loss processes to remind them to take their medication. Another proposal focused on the design of a simple system for measuring the pH of water to ensure that rainwater is safe for human consumption .

In more qualitative terms, the initiative is shaping up as a space for sisterhood, which fosters curiosity, creativity and the empowerment of girls through opportunities for analysis and self-assessment, project development and collaboration dynamics.

The difficulties encountered in implementing the project include the need to promote an

ecosystem that encourages girls to discover STEAM disciplines. As a result, a lot of work was needed with the educational community (especially with families, management teams of schools and teaching teams) to publicise the project and get them involved with motivating girls to take part in and stay loyal to the initiative. This has mainly been done by publicising the project in coordination with the Department of Municipal Education, fostering collaboration between C3Tec and schools, promoting extracurricular activities related to science and technology, and providing individual mentoring for the participants.

➔ Future proposals

With a view to the future, the plan is to continue implementing the initiative and to encourage the materialisation of the projects and/or prototypes developed by the girls by involving the municipal innovation support network.



i Contact

- ▶ **Organisation:** Autonomous Municipality of Caguas (Centro Criollo de Ciencia y Tecnología del Caribe)
- ▶ **Contact Person:** Ms. Tasha L. Endara Álvarez (Executive Director)
- ▶ **E-mail:** tendara@c3tec.org

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