

Spark! Innovation Fellowship: My Science Guide

STEM Mentorships for All

The Spark! Fellowship program is dedicated to catalyzing Boston University student innovators passionate about solving problems through technology. As a Spring 2020 Spark! Innovation Fellow, I led the development of the first online research mentorship platform for Latin American High School Students.

The Challenge

High School Students in Latin America face hardships while conducting research and lack access to research mentorship and resources. This causes students to become discouraged from pursuing research or showcasing it in science competitions and conferences.

Solution

The My Science Guide app matches students to mentors based on their research interests, experience level, and language. Students and mentors can then connect, learn more about their backgrounds, and chat to share advice, guidance, and feedback on their research journey.

1. Ideation

The basis for the challenge that we were focused on solving came from previous personal experience. In 2016, I was an 11th grade high school student in Puerto Rico making my first

research project. I was able to showcase my research at the Intel International Science & Engineering Fair, but arriving there I witnessed something that shocked me. There were students from every country in the world but there was a significant educational gap that existed between the quality of research from students in Latin America compared to the rest of the world.

Problem Validation

Given my own personal experience with this issue and consulting with many STEM teachers from around the island, the issue is increasingly apparent in low-income schools (predominantly those from a public education system). To gauge the scope of this problem in other countries, I developed Facebook Ads for a mock “product” that promised students and mentors the opportunity of forming connections and creating top-level research projects.



A screenshot of a Facebook ad. At the top left is the My Science Guide logo, which includes a stylized molecular structure icon. Next to it is the text "My Science Guide" and "Sponsored". Below the logo is a headline in Spanish: "¿Eres apasionado de las CIENCIAS, la INVESTIGACIÓN y la INGENIERÍA? ¡Sé uno de los primeros en saber acerca de la PRIMERA plataforma de mentoría científica para Latinoamérica! Accede a nuestra página para más información:". Below the headline is a photograph of two students in a laboratory setting. One student, wearing a white lab coat and safety goggles, is holding a small white cup. The other student, wearing a blue hoodie and safety goggles, is looking down at a piece of paper or equipment on the lab bench. In the background, other students and lab equipment are visible. At the bottom of the ad, the text "UNBOUNCEPAGES.COM MENTORIA CIENTIFICA" is displayed, followed by a "Learn More" button.

These ads were linked to a splash page where students and professors could sign up and receive further info.

Both of the ads ran for two weeks with a cumulative total spend of \$30 and targeted to high school students and teachers in Mexico, Costa Rica, Panama, and Puerto Rico. They garnered over **160,000 impressions** and over **800 link clicks**. With around **50 user conversions** in just five days, we decided to move forward with the project.

Customer Interviews

To further understand this problem, I've spoken to science teachers, math teachers, research professors, and dozens of students from around the world. Highlights include:

Caitlin Sullivan: Director of Outreach & Equity Programs at the Society for Science & The Public

As the lead for the Science Advocate Program, Caitlin was knowledgeable about underrepresented student and mentors' needs while conducting research. During our conversation, we tried to delve deeper into the nature and importance of mentorship in students' lives. She expressed "Students greatly benefit from having a mentor. They are more accessible than a research lab and increases their motivation in presenting at top competitions."

Youth Scientists for Puerto Rico: Largest Private Non-Profit Science Fair in Puerto Rico

This organization was founded by Enerys Pagán (President) after she participated in a US Science Fair and noticed a gap in the quality of projects coming from Puerto Rico compared to state-side schools. They've worked with students of all socioeconomic backgrounds in showcasing research. They expressed "One of the brightest students we helped with their research did not have access to a computer in their house, but showed an incredible potential that just required some mentoring to let shine."

Design Sprint

Bringing together our research on the issue, customer interviews, and problem validation metrics, we met for a weekend-long design sprint to come up with possible technological approaches to the challenge faced.

User Personas

Two user personas were developed from the data and insights collected:

GUADALUPE: LATIN AMERICAN HIGH SCHOOL STUDENT



Jobs: Searching for a mentor to start a research project.

Pains:

- Have no previous experiences, don't know how to start with a new research.
- Language Barriers.
- Couldn't find tailored mentors or exciting research.
- Couldn't keep the mentorship and feels unsupported.

Gains:

- Find a related science research community.
- Obtain information about mentors, researches, and labs.
- Keep the connection with mentors and other students.
- Expand their knowledge and ideas to improve their work.
- Exposure to their work.

CAMILLA: RESEARCH MENTOR



Jobs: Mentor a Latin American High School Student doing research.

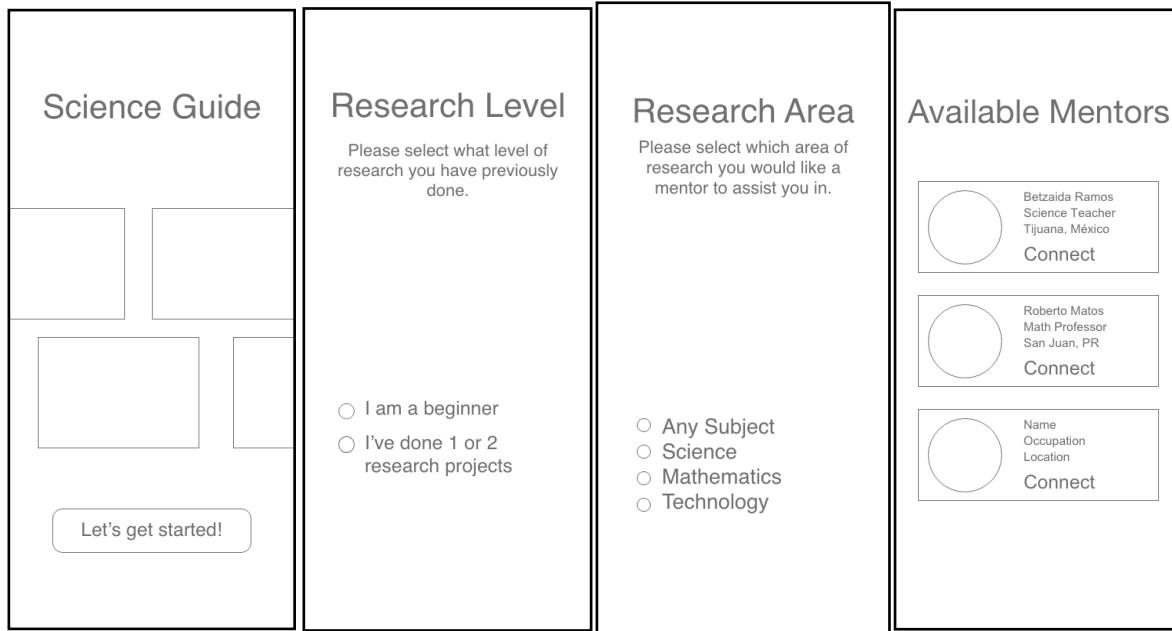
Pains:

- Has a hard time recruiting students who are interested in specific projects.
- Faces difficulty providing and sustaining mentorships without structure.
- Hard to keep up with students.
- Challenging to motivate students and give them a needed coach without reliable resources.

Gains:

- Find students and communities.
- Keep up with the latest progress on the project.
- Be able to maintain communication with the students.
- Receive coaching on how to best mentor their students.
- Networks with other related researchers and programs.
- Train their skills as a science team leader.

Wireframes



2. Design & Code! 🎨📱

Mockups



Code Development

3. Launch & Future Development