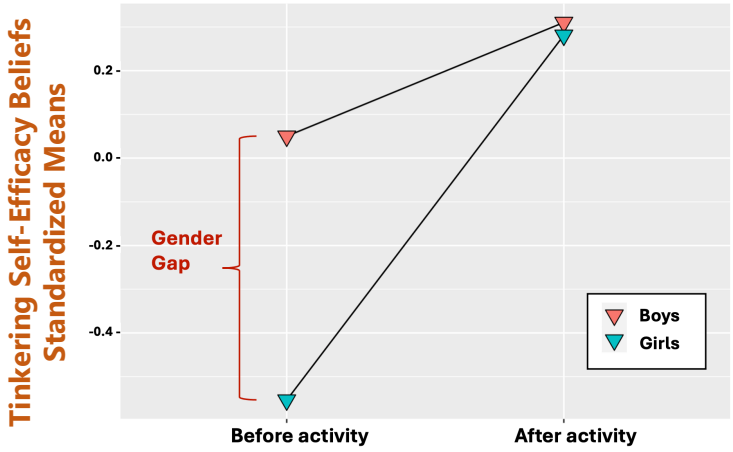
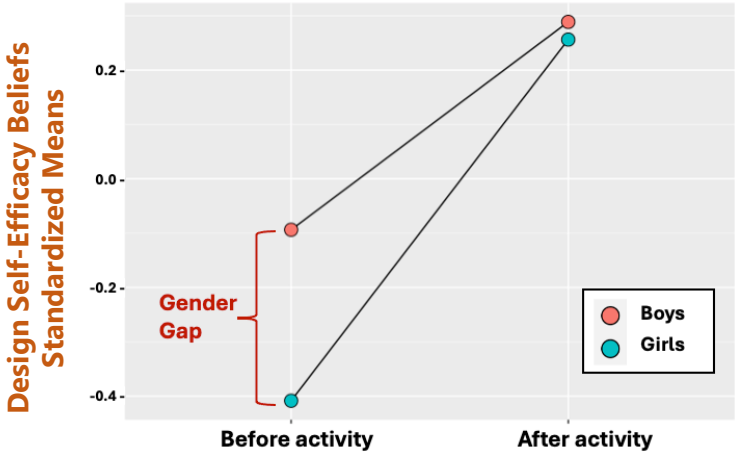
# The 1.5-hour engineering design activity empowered high school students to be change agents and enhanced girls' thinking and design self-efficacy

ECR Hub
EDU Core Research

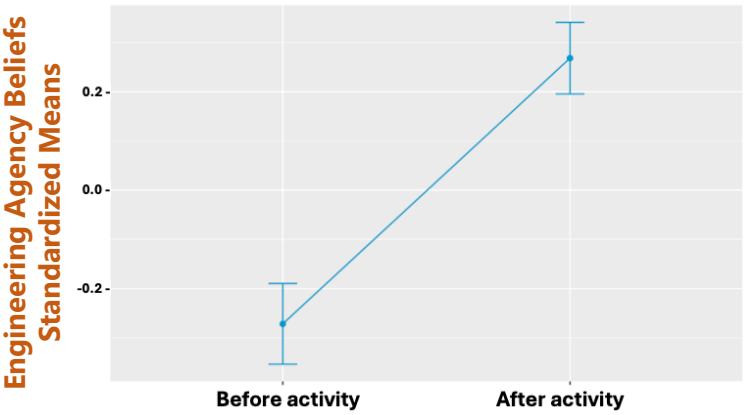
*#2225306: Empowering Children of Migratory/Seasonal Farmworkers with Gamification & Culturally Responsive Engineering Design Instruction*

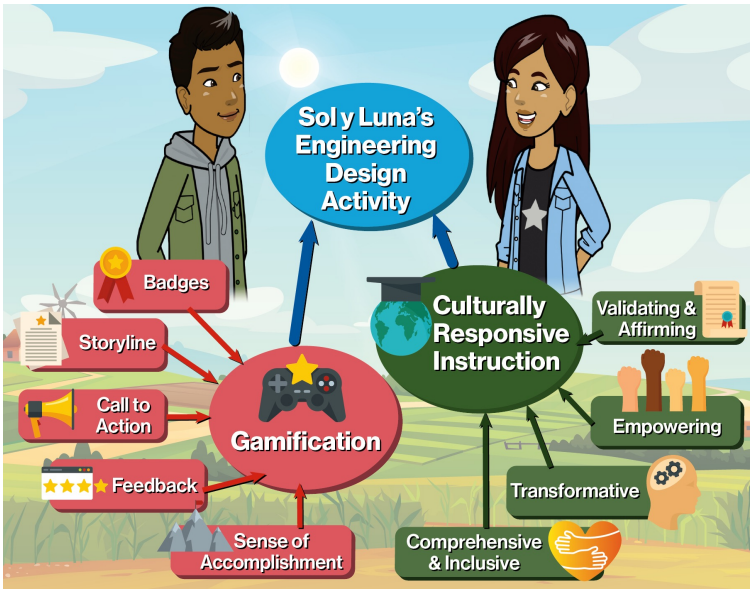



**Engaging in the activity boosted high school girls' tinkering confidence**

**High School girls' design capabilities increased after engaging in the activity**




**Students saw themselves as agents of change who could use engineering to make a difference**

## Methods

2 sites | Pre/post survey | Mixed ANOVA

57% 43%

94% No prior STEM engagement

**140 high school students participated in a 2-part activity:**

1. ***Online Storyline:*** Sol y Luna's culturally responsive & gamified engineering design activity
2. ***Hands-on:*** Building a soil detection device using Arduino, coding, & moisture sensors

**Activity Shot Clip**

## Challenge Area

Interviews | Time

- Could not conduct interviews with high school students because of time limitations and/or lack of consent from the program organizers.
- Difficult to incorporate the experiences of the engineering undergraduates into the activity while keeping the activity duration short


Dina Verdín, PhD
dina.verdin@asu.edu
Ira A. Fulton Schools of Engineering
Arizona State University