



Girls Building Information Technology Fluency Through Design

PI: Melissa Koch (SRI International), Co-PIs: Melissa Bryan (Girls, Inc.), Marie Bienkowski (SRI International)
 Build IT Team (SRI International and Girls Inc.), Michael Arnold (Hatchuel Tabernik and Associates)

Our Mission

Goals

Motivate middle school girls to

- Use technology to strengthen and build their technology fluency.
 - Take high school algebra and geometry courses in preparation, for postsecondary STEM education and/or IT careers.
 - Explore IT and pursue IT careers.
- Enhance staff capacity to offer IT fluency programming.



Girls learning to brainstorm with a mechanical engineer from IDEO.

Strategies

Develop the following portable materials to achieve these goals:



Girls learning to present their designs.

- Problem-based curriculum using the *Understanding by Design* approach
- Embedded performance tasks for evaluating technology fluency
- Youth staff professional development materials
- Frameworks for involving local IT professionals
- Summative evaluation instruments for measuring girls' career goals

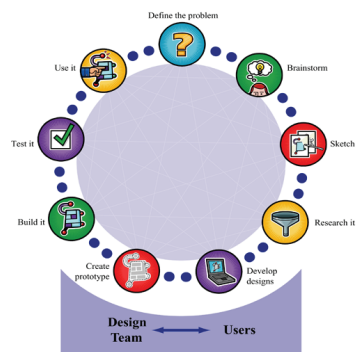


Girls researching the design of communication technologies.



Girls on a fieldtrip at Google.

Our Process



Build IT is a cornerstone of the Girls Incorporated of Alameda County (Girls, Inc.) Middle School Program. This problem-based curriculum capitalizes on girls' interest in design and communication technologies. Each unit of Build IT incorporates several performance tasks for IT fluency.

The units are developed by SRI International's Center for Technology in Learning and Girls Inc., reviewed by the advisory board, and implemented by Girls Inc. staff.

Formative evaluation plays a critical role in the iterative design of the curriculum, understanding what girls are learning, and determining staff's

capacity to implement the curriculum. It includes

- Observations
- Written feedback from program leaders
- Interviews with staff and girls
- Performance task artifacts

Summative evaluation measures Build IT's progress in achieving its goals through staff interviews and surveys of IT attitudes, concepts, and skills of participants and a comparison group.

Year 1 findings

- Girls' image of IT careers as solitary and boring are changing significantly to collaborative, fun, and intellectually stimulating.
- Girls are increasing their technology skills and demonstrating these skills to themselves, peers, parents, teachers, IT professionals, and program leaders.
- Girls are expressing more interest in taking math and computer science courses.
- Girls Inc. staff are developing greater IT knowledge and skills.



Girls at Family Tech Night showing parents, teachers, and IT professionals their designs and what they are learning.



Lessons learned and plans

- Keep standalone, short activities to a minimum and in support of project-based activities that enable girls to express themselves.
- Be explicit about what math and computer science courses girls can take in school and their community.
- Provide more IT professional fieldtrips; they are more powerful and easier logistically than IT professional visits to school sites.
- IT concepts included in the enduring understandings need to be very explicit in the curriculum. Provide time in the curriculum for girls to reflect on these concepts and in the professional development (PD) for the staff to reflect.
- Girls Inc. staff are ready to lead the PD in Year 2.
- Investigate what elements of Build IT are impacting girls' perceptions of IT careers.

Participants & The Team

Participants

- 150 middle school girls in Alameda County, California
- 82% are African-American and Latina



Girls using and designing for mobile technologies.



Girls designing Web sites with a chat feature.

- Majority comes from low socioeconomic households
- Reach girls through Girls Inc.'s school relationships

- Reach others through Girls Inc.'s 1,500 program sites nationally

Benefits to girls

- Develop IT fluency
- Use, explore, and design IT
- Understand the connection between mathematics and technology and the importance of taking high school algebra & geometry
- Interact with IT professionals and learn about IT careers

The team includes

- SRI International;
- Girls, Inc.;
- Advisory board members with expertise in assessment, evaluation, technology, and youth development;
- IT professionals; and
- HTA summative evaluation lead.



Girls Inc. staff providing PD to program leaders.

This material is based upon work supported by the National Science Foundation under Grant No. ESI-0524762. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

