



## Girls Building Information Technology Fluency Through Design

Build IT is an NSF-funded problem-based curriculum that capitalizes on girls' interest in design and communication technologies. Developed by SRI International's Center for Technology in Learning and Girls Incorporated of Alameda County (GIAC), Build IT reaches middle school girls from populations under-represented in IT fields.

The goals of Build IT are to motivate middle school girls to

- Explore IT and IT careers
- Use technology to strengthen and build their technology fluency
- Take algebra and geometry courses in preparation for postsecondary STEM education and IT careers.

In addition, Build IT enhances staff capacity to offer IT fluency programming.

### *Girls Image of IT Careers as Solitary and Boring Are Changing to Collaborative, Fun, and Intellectually Stimulating*

Build IT girls demonstrated:

- A 10% increase in sentiments that IT careers would be fun.
- A 10% decline in feelings that IT careers would be boring.
- A 13% decline in feelings that they would not enter IT careers because they do not like computers.

Many of the girls interviewed expressed their interest in IT careers and were able to articulate the responsibilities of specific IT jobs.

*"I've noticed that my daughter's interest in computers has grown."*  
— Build IT Parent

*"I want to be a software engineer because I want to be involved with computers."*

— Build IT Participant

*"I would like to create software because I would make a lot of money, and people in these jobs are intelligent."*

— Build IT Participant

### *Girls Are Increasing Their Technology Skills and Conceptual Knowledge*

Participants reported substantial growth in their perceived IT skills:

- 90% stated that they were able to use the computer to communicate-up from 75% in the fall.
- 69% agreed that they would be able to learn new computer programs and software-up from 57% in the fall
- 64% were confident they could describe how information travels through the Internet-up from only 29% in the fall.

Girls demonstrated their skills and conceptual understanding formally through Performance Tasks, such as:

- Looking at HTML code and drawing by hand the resulting page.
- Using design criteria to give each other feedback on their websites.
- Fixing their own HTML code and helping other participants troubleshoot HTML errors.

*At Family Tech Nights, girls gave presentations to attendees on the design process and how the Internet works. They demonstrated to themselves, peers, parents, teachers, IT professionals, and the program leaders that they understood IT concepts.*

In contrast to their non-Build IT counterparts:

- Build IT participants demonstrated a 14-percentage point higher increase in understanding design, computers, networks and technology concepts.
- Build IT girls were 20% to 23% more likely to teach others about computers and technology.



---

## *Girls Expressed More Interest in Mathematics and Computer Science Courses*

Build IT girls demonstrated:

- A 27% increase in positive attitudes toward taking computer courses in high school.
  - A 24% increase in interest toward upper-level high school mathematics courses.
- 

## *Staff Have Developed Greater IT Knowledge and Skills*

- 100% of the staff (middle school program manager, site coordinators, and youth leaders) thought that Build IT fit well with the GIAC middle school program and supported continuing Build IT at their program sites.
- GIAC has also hired a full-time Build IT coordinator to support the staff in its ongoing implementation of Build IT.
- GIAC staff members are assisting staff at other Girls Inc. affiliates to implement Build IT.

GIAC staff reported and demonstrated increased:

- IT understanding
- Capacity to support participant engagement.
- Ability to communicate effectively with the technology support staff.
- Capacity to troubleshoot technical problems.
- Ability to maintain equipment, including Internet and server access.

*"Build IT has strengthened my IT knowledge a lot, and has helped me feel more secure in my knowledge. Overall, I really enjoyed Build IT, but it was a learning lesson."*

— GIAC Staff

*"The Build IT curriculum was challenging because technology isn't my field of expertise. But I was excited because I was learning with the girls."*

— GIAC Staff

*"Before Build IT all I knew how to do was send emails and do word processing. Involvement in Build IT has greatly increased my IT skills. I never knew how anything traveled in the Internet. Now, not only do I have that knowledge, but I've learned how to create blogs, and I've learned IT vocabulary. The curriculum was a very good thing for me."*

— GIAC Staff

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.

---

