Makerspace Playbook Site Survey: DIY Girls
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CONTACT INFORMATION

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ORGANIZATION

Organization Name: DIY Girls

How would you describe your organization type (library, museum, school, community organization, etc.)? Non-profit organization

Organization website: http://www.diygirls.org/

Organization social media links:
https://twitter.com/DIYGirls
http://instagram.com/diygirlsorg
https://www.facebook.com/DIYgirlsLA

https://www.youtube.com/user/diygirlsLA
https://www.flickr.com/people/diygirls/

Blog and/or site most related to programming, making:
http://www.diygirls.org/blog/

Organization news/publicity links:
 http://www.diygirls.org/in-the-news/

Location (city, state): Los Angeles, Calif.

Is your organization rural, urban, or suburban? Urban

Is your space and/or elements of your programming mobile? Elaborate, if necessary.
Yes, within a region. We currently serve:
- 3 elementary schools
- 2 high schools
- Middle school girls at a local community center
- Library patrons at the Pacoima Public Library
- Women across the region of Los Angeles

We are expanding to Pasadena this spring to serve elementary school girls.

We have two permanent spaces in elementary school classrooms — the rest are
mobile makerspaces.

Target audience(s):
Elementary school: 5th grade girls (ages 10–11), 4th grade boys and girls (ages 9–
10)
Middle school: 6th-8th grade girls (ages 11–13)
High school: 9th-12th graders (ages 14–18)
Library: Families of all ages, boys and girls
DIY Women Meetup: Women of all ages and their children

**Access: Is your organization open to public, age restricted (elaborate below), membership-
based, free, and/or admission required? Are there specific groups that you serve?**
Elementary school: 5th grade girls (ages 10–11) and 4th grade boys and girls (ages
9–10) at targeted school sites
Middle school: 6th–8th grade girls (past DIYgirls, ages 11-13)
High school: 9th–12th grade girls (ages 14–18) at targeted school sites
DIY Girls Meet up: Open to public
Library programming: Open to public
Summer Camp: Open to any middle school girl

Tell us about your organization. What distinguishes you from others?
√ Staff dynamic
√ Access to underserved youth
√ Community ties: We understand the Latino community. It's easy for us to identify needs and wants of both parents and kids.
√ Staff has varied interests
√ In-house Spanish resources
√ Affordable projects
√ Creative flexibility encouraged

MAKING AND CORE VALUES

What is your mission statement?
DIY ("Do-It-Yourself") Girls' mission is to increase girls' interest and success in technology, engineering, and making through innovative educational experiences and mentor relationships. DIY Girls develops and implements educational programs and events designed to encourage engagement with technology, promote self-confidence, and support aspiration to technical careers.

What does it mean to "make" in your space/organization?
Making means using your head, hands, and heart to create something meaningful. At DIY Girls, we make connections — both mental and physical. Although "making" does not always have to end in a "thing," we strive to teach our girls technical skills that will allow them to make real-world products.

How does the above relate (or not relate) to your core values?
Empowerment: By teaching our girls technical skills, we provide them the opportunity to "do it yourself." By taking charge of their own projects, we hope they grow confident in their capabilities to produce things they find meaningful. Completing a project and helping others gives girls a sense of accomplishment and value.

Creativity: Making meaningful projects allows our girls to push their imagination to new heights.

Engagement: We start 5th-grade girls off with an intensive after-school program that's held at their school twice a week for two hours daily during the school year. We continue offering programs during the summer to keep girls engaged. Our programs provide engagement, excitement, and exposure to creating with technology. Girls design and make toys, program their own video games, design creative inventions with conductive paint, and make wearable electronics products. Our projects help provide motivation and relevance so the girls want to learn technical skills.

Capacity building: The girls in our program make real things and learn practical

technical skills that can be applied creatively. If you visit any of our programs, you'll see girls coding, soldering, building electronic circuits, using a 3D printer, and building with power tools. Girls are learning by doing while applying the math and science they learn in school. And they're gaining confidence and practical in-demand skills for 21st-century careers.

Continuity: We aim to provide a continuous pathway to success. From 5th grade through 12th grade, our goal is to connect girls to opportunities to gain more technical and leadership skills and introduce them to careers while providing guidance to support their advancement.

What forms of making (all creative endeavors) occur?
Connections: circuits, collaboration, ideas, friendships

Products: games, jewelry, animations, robots, music, lights, rockets, e-textiles, stories

Are you influenced by any particular pedagogies (approaches to learning)?
Project-based learning

What are some good examples of especially powerful/ ambitious/successful making experiences?

When the making continues at home:

Wendy: At the start of our program, Wendy was very dependent on our instruction. She was used to observing while someone did the project for her. Every session, we reminded Wendy of the importance of DIY, "doing it yourself." Little by little, she warmed up to the idea. One day, after learning how to sew a simple circuit, she came in with an LED stocking and told us how she had taught her mom how to sew the circuit, and together they made something they could use for Christmas. Wendy taught an adult about creative electronics AND spent quality time with her mom.

Daisy: Daisy's dad is an engineer. She often asked us if she could bring extra supplies home to show her family. Over the course of the program, Daisy was excited to show us the projects she was working on outside of DIY Girls. My favorite "Daisy and Dad" project has to be the DIY irrigation system they built for their plants.

When making means collaboration:

Alondra and Dora are autistic. They have a good bond. As we go through the project together, persistence prevails. They never give up and always keep each other in mind when creating projects.

When making means persistence:

Jaline kept trying different ways to make her rubber-band-motorized car move. Classmates laughed at her as she tried and failed. She kept at it and was successful in the end. Jaline was so happy — she expressed to us that she had never been successful with anything. In that moment, making her car move meant the world to her.

GOALS

What are the goals of the programming and experiences provided?
We want to expose our girls to fun, hands-on tech experiences in order to shape the way they perceive tech careers. We want them to build the confidence needed to be innovators and apply whatever tech skills they learn to projects that interest them.

How do your environment, tools, and materials reflect these goals?
The space we create is fun! Our kids look forward to every week and hate to leave us. We work really hard to create a positive relationship with them because we know that's what they need. Our staff dedication and passion fuels their energy and anticipation to learn about creative electronics. In our space, all materials are clearly labeled. Girls are notified at the beginning of the program of what they are free to access. We believe that having tools and materials out in the open helps inspire kids to create.

How do you know when you've met your goals? What are your metrics of success?
√ Successful projects
√ Stories about kids sharing skills with their family
√ Direct quotes: "I figured it out."
√ Next project anticipation

What are your plans and hopes for the future of your space and programming?
We want to serve more girls!

TOOLS

What are your most frequently used and commonly available tools?
Scissors, wire cutters, hand saws, X-Acto knives, glue guns, computers, soldering guns, screwdrivers, pliers, hammers

List any special tools that require supervision, training, and/or certification.
Hand saw, scroll saw, 3D printer, X-Acto knife.

What are the favorite tools (most popular/most desired, even if you don't have many)?
Glue guns and computers

MATERIALS

What are some of the most popular and frequently used materials?
Tape (masking, electric), paper (graph, construction — pink and purple), cardboard, LEDs, batteries (coin, AA, 9V), pens, pencils, markers, string, wire, hot glue, paper clips, brass fasteners, felt, conductive thread, sewing material, motors, foil, copper tape

What are some of your most interesting/ unexpected materials?
After-school snack plastic containers and lids: We keep them to store project materials and/or create with.

What are the most continually reused materials? Most consumed?
Most consumed: Tape (all kinds), hot glue, wire, paper

Share any specific or general sources for materials.
We frequently visit the Dollar King, 99-cents store, and the web for our materials. On the web, we buy from All Electronics and SparkFun.

COLLABORATION

What are some of the institutions and organizations that are sources of inspiration, support, and influence?
Maker Ed, Girl Start, MIT Media Lab (Scratch team, Makey Makey), Adafruit, Sabine Seymour's *Fashionable Technology*

SPACES AND ENVIRONMENT

In what physical places does making happen in your organization? A single dedicated space, multiple dedicated spaces, general use areas, a workshop (metal, wood, sewing, etc.), outdoors, a theater, a music studio, an art studio? Everywhere? Somewhere else?
Multiple dedicated spaces

Elaborate on where making happens, if needed.
We have two permanent spaces in elementary school classrooms. Our other programs are run in borrowed classrooms, library community rooms, and community centers.

How are the spaces, tools, and materials organized?
We organize our materials in labeled plastic bins under two major categories: electronics and crafts. Our tools are displayed on the wall using a large pegboard. We add shelving where needed.

How large is the space(s) where making happens?

Our space is the size of an average classroom: about 50 ft. x 30 ft.

Please describe how your site and makerspace(s) are staffed, including numbers of full and part-time staff and volunteers.
After-school programs: We assign two PT staff members to each program. Each after-school program serves about 25–30 girls so we feel it is necessary to have two staff members present at all times. Two schools run twice a week; all others run one time per week.

Engineering Enrichment program: Here, we also assign two staff members. This course is very different from our after-school program. It is 45 minutes long and runs more like a class for efficiency purposes. The program serves all 4th-grade boys and girls at one of our designated elementary schools.

Middle school program: This is a monthly Saturday program that needs at least one PT staff member and ideally three volunteers.

High School Young Innovators program: This program serves about 10–15 girls and is overseen by one PT staff member, twice a week.

Poderosas: This is our most recent pilot program. We want to train high schoolers to run their very own DIY girls club at their respective schools. At the beginning of the program we assign two staff members to the club, but the idea is for it to be self-sustaining with remote support available.

Library program: This is also a monthly Saturday program that needs at least one PT staff member and ideally three volunteers.

DIY Girls Meetup group: These occasional meetups require one staff member and at least two or three volunteers.

First impressions of space(s):
Ideally, when participants first enter our space, wherever it may be, they see welcoming mentors, snacks, and project materials. They hear hello's, what's up's, laughing, a project breakdown, questions, background music, and other participant chatter. They feel excited, hyper, frustrated, triumphant. They experience learning new skills, making mistakes, troubleshooting, play, and conversation. They leave with a finished project and a sense of value.

PROGRAMMING

Describe the kinds of programming offered.
DIY Girls offers programming for 5th-grade girls, middle school girls, HS girls, women, and families.

Our after-school program is for 5th-grade girls and runs for two hours, one to two times a week. We break our curriculum into 10-week units. Projects are categorized under three categories:

1. Creative Electronics: This session will focus on learning electronics through creative materials like conductive paint, thread, and copper tape. We will use curriculum developed by the High-Low Tech group at the MIT Media Lab. The goal is for girls to be creative while learning basic electronics.

2. Building and Tinkering: This session focuses on teaching girls to use tools needed to build things. They will learn appropriate ways to use the tools in addition to safety techniques. We aim to instill confidence through this session.

3. Product Design and Career Exploration: The last session will allow the girls to combine the skills developed to design and create their own product in teams. The session will culminate with a public showcase of the products and girls will document and share their projects with online communities. We will also discuss careers in technology and invite speakers to attend the session.

Of course, our programming is not static. It's always changing depending on our girls, materials, and level of engagement.

Middle School programming: This is a once-a-month gathering of our 5th-grade DIY Girls graduates. We meet at a community center and either work on a project, visit a tech company in Los Angeles, or bond over archery. This program is meant to seal the mentor relationships we have with our girls. We want to remain in contact so that we can share all of the fun DIY Girl programming available to them in high school.

High School programming:

1. Young Innovators: A design-thinking program for girls in 9th–12th grade that runs for 10 weeks, twice a week, with the goal of creating a product that will solve a problem at their school.

2. Poderosas: A pilot program that aims to create self-sustaining DIY Girls Clubs in high schools across the nation. Here, girls create hands-on tech projects with the remote support of the DIY Girls team.

Library programming: This is a once-a-month, two-hour workshop that introduces fun, engaging activities to kids and families. It's open to the public and free for all.

How did your space and programming get started?

Luz Rivas, Founder and Executive Director of DIY Girls, started DIY Girls in 2013 after securing a space at her alma mater, Telfair Elementary. She ran the after-school program with the bare essentials, with her first unit titled, "Creative Electronics." The after-school program was held for two hours, three times a week. There, girls created simple circuits, e-textiles, conductive art, video games, and more.

How do you decide on/design/make possible the space and components of the program?
Luz has close ties with the community we serve. She was able to secure a space at her old elementary school by presenting her case to the principal of the school. Luz's "just do it" attitude gets the organization where it needs to be. We reach out to schools and make contact with the administration. After creating a relationship with someone in charge of programming, we invite them to visit one of our spaces to see the program in action.

How has your environment and programming evolved? What has worked well, and why? What has changed? What could still be improved?
We now serve 10 times as many girls and that number continues to grow. In 2013, DIY Girls had a staff of two. Now, we have five DIY Women on the team. More staff is critical to expanding programming! Our next step as an organization is to find a permanent office space outside of the school system and expand to other regions of Los Angeles.

EQUITY AND ACCESSIBILITY

Are there segments of the population that you hope to serve better?
We want to provide programming for more girls in underserved areas. There is a lot of work to be done.

What strategies do you employ to help increase the accessibility of your space/program to all learners?
We hold programs once a week for 10-week units to serve more elementary schools in the area. We also offer summer camp and library programming to serve kids in the community we may not reach otherwise. Our after-school, middle school, high school, summer, and library programs are free for the participant.

What has worked well? What has been the greatest challenge?
Scheduling staff and coordinating materials and program logistics is a delicate balancing act. What works well is organization. In order to successfully run our programs, we meet once a week to discuss program details, updates, and action plans. Weekly team meetings make us stronger as a team and organization.